AUGUST 3, 1935

Railway Age

FOUNDED IN 1856

NOW — It's Machine Tools!

RECENT years have witnessed many new and striking improvements in railway equipment and service that stand as a credit to railway managements and manufacturers alike. From the standpoint of the tremendous cost of equipment repairs, however, what is the situation in regard to shop facilities and what can be done about it?

In discussing this problem, an editorial in this issue entitled, "Six Years of Machine Tool Progress", calls attention to a timely opportunity presented to railway men to view, under one roof, the many developments that have taken place in machine tools in recent years:

"The opportunity to see the extensive development work that the machinery manufacturers have done during this period of business stagnation, will be presented by the Machine Tool Show to be held at Cleveland, Ohio, from September 11 to 21 of this year. . . It will afford railroad men, as well as all other users of shop machinery, an exceptional opportunity to study the progress in this field and to compare the ability of today's machine-tool equipment to perform machining operations more efficiently and at a lower cost than the tools which are now in service in the typical railroad shop."

For the special benefit of railroad men, Friday, September 20 has been designated by the management of this exhibit as "Railroad Day."

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Railway Age

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In This Issue

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RAILWAY AGE

A Congressional Committee on Competition in Transportation

If there were a strong public sentiment for government ownership of railways, the way to deal with that question would be to discuss it on its merits. But there is an overwhelming public sentiment against government ownership. The Roosevelt administration is opposed to it, however much it may be favored in principle by some of the radical supporters of the administration. The danger of government ownership is due to government policies in effect, or proposed, which tend, or would tend, to make impossible the maintenance of private ownership. The prevention of government ownership requires that the railways shall be made a self-supporting industry under private ownership. They are not a self-supporting industry now because their gross earnings are too small in proportion to their operating expenses, taxes and fixed charges. The only way to make them a self-supporting industry is either to increase their earnings, or to reduce their costs, or to do both. Efforts to prevent government ownership which do not deal principally with the problems of making the railways a self-supporting industry will be futile.

All Interests and Sections Heard

The *Railway Age* has for years taken the initiative in presenting what it has regarded as the vital issues raised by the railway situation, the facts bearing upon them, and the government and railway policies that these facts indicate must be adopted to preserve the railroads as a private industry and enable this industry to contribute its full share toward the national economic welfare. The committee on Interstate and Foreign Commerce of the national House of Representatives on July 22, without dissent, submitted to the House a report which, in its presentation of facts and conclusions regarding the existing transportation situation and the government policies that have helped to create it, is a remarkable vindication of what this paper has been saying for years upon this subject.

The committee is composed of members of all parties who have heard testimony upon every phase of the transportation situation from representatives of every interest and section. The report submitted by it on July 22 related particularly to the Pettengill bill for the amendment of the fourth (long-and-short-haul) section of the Interstate Commerce Act, but it was not only non-political, but touched upon numerous matters besides the fourth section and its effects.

The committee had heard testimony regarding this bill, and also regarding the bus-truck and waterway regulation bills from representatives of the railroads; of the twenty-one standard railroad labor organizations who, in this instance, spoke authoritatively for virtually all railroad employees; of the National Industrial Traffic League, representing virtually all large industrial shippers; and of every class of shippers in the especially affected western territory. Every "pressure group" directly concerned had had opportunity to apply its pressure; and the report touches upon government-aided competition with the railways by both highway and water. We quote below at some length extracts from the report which are highly significant as indicating the changes in government policies affecting transportation which fairness to the railways and their employees and the welfare of the public demand shall be adopted, and which have been so long advocated in these columns:

Competition and Long-and-Short-Haul

COMPETITIVE TRANSPORTATION SITUATION.—"If the railroads at one time had, they no longer have a monopoly in the transportation field. Ships and trucks are in position to handle a large part of the traffic that formerly moved exclusively by rail. * * * The intercoastal steamship lines now concededly have a practical monopoly of all traffic transported between the seaboards with the exception of perishables, and reach far inland on westbound traffic, charging lower rates on traffic originating at the interior than charged on traffic at or in the vicinity of the port. * * * Since 1920 the competition of millions of trucks and buses throughout the country has developed, as has

also the competition of pipe lines transporting petroleum, gasoline, and natural gas, supplanting other forms of fuel, including coal.

Electric Lines Ship "Coal by Wire"

LONG-AND-SHORT-HAUL PROVISION.—*"There is no long-and-short-haul prohibition in effect on any other competitive form of transportation, and none is proposed in any pending legislation in Congress respecting regulation of water carriers, trucks, and buses. Common fairness demands equality of treatment.* * * * A large proportion of the expenses of a railroad company is constant, and it is self-evident that if a railroad company is not participating in traffic handled by competitive forms of transportation its entire expenses must be liquidated by rates received from such business as it does move. * * * Enactment of this bill will greatly benefit the interior country from the standpoint of distribution and marketing of its production and from standpoint of increased pay rolls and expenditures, etc. * * * *It could not possibly adversely affect interior points of destination to have traffic transported by rail through such territory at charges higher than are now available or would at any time be available by water to the consignee in the Pacific Coast territory.* * * *The Commission, with the long and short haul provisions repealed as proposed, would have complete power under other provisions of the law to prevent railroads from doing anything which Congress ever intended they should be prevented from doing."*

Competitors of Railways "Heavily Subsidized"

GOVERNMENT COMPETITION AND SUBSIDIES.—"Principally through government expenditures providing rights-of-way, large amounts of traffic have been diverted to competitive forms of transportation on inland waterways, including rivers and canals. The government itself engages in a competitive operation on the Mississippi river. * * * Water lines everywhere, particularly in the inland waters, are the beneficiaries of enormous expenditures of the government for improvement and maintenance of the highways and harbors which they use in competing with the railroads. *They are, in fact, heavily subsidized by the taxpayers, including the railroads. Generally the same is true of the motor truck competitors of the railroads,* for their taxes, including gasoline fees and license fees, almost altogether go into the construction and maintenance of the highways which they use to compete with the railroads. * * * The railroads, of course, acquire and maintain their own highways at their own expenses."

TAXES.—"An additional feature of importance is the annual contribution of these railroads in taxes wherever they have tracks or facilities to support the federal, state, county and city or town governments and schools. * * * The railroad taxes in 1933 represented over 8 cents per $1 of revenue, or 1.8 cents greater than in 1929. Class I railroads in 1929 paid taxes amounting to $396,682,634, and in 1933, $249,623,198. The record shows that 116 water carriers paid in 1933 an average of but 1½ cents in taxes per $1 of revenue, and that in many instances water carriers paid very little in the way of taxes—generally nothing on floating equipment, the major part of their investment."

Effects on Railroad Employment and Durable Goods Industries

EMPLOYMENT.—"Railroad employment is now only one-half of what it was in 1920 and there has been a decrease from 1,600,000 employees in 1929 to 1,000,000 at this time. * * * Their average wages, their position as home owners and standing as good citizens prove them to be a valuable element in society. In the sparsely settled sections of this country the railroad pay roll is highly important in supporting local merchants and jobbers and the community in which they reside. They are entitled to a fair and equal opportunity to maintain their livelihood in an employment in which they have specialized in competition *with forms of transportation competitive with railroads whose employees on the average receive much less compensation for their services, and the labor relations of which, in large part, are unregulated."*

RAILROADS AND DURABLE GOODS INDUSTRIES.—"Their (railways') purchasing power, when good, substantially contributes to the support of basic or durable goods industries which are now a matter of justifiable concern in this country from the standpoint of employment and economic recovery. * * * The total as nearly as ascertainable of the purchase of durable goods in 1923 by Class I railroads was $1,819,980,000 as compared with $487,246,000 in 1934. * * * This illustrates the importance of the rail transportation system in this country to its general economic welfare in addition to the maintenance of adequate and satisfactory transportation service."

RAILROADS AND NATIONAL DEFENSE.—"The railroads are highly essential for national defense and must be maintained. * * * The position of the War department is that in a war with a Pacific power the San Francisco area would be the most important base, and no matter how many tracks there were in that area, more would be desired. * * * During the first year of the national emergency centering on the west coast, for Navy vessels alone, the railroads would have to carry about 12,000,000 tons of supplies. During the same year, for the west coast, for work at the Navy yards and for various other navy projects, the railroads would have to carry about another 12,000,000 tons of supplies. This would mean the carriage of about 600,000 car loads, or the delivery of about 1,650 cars every day, or 33 trains of 50 cars each, of Navy supplies alone."

General Business and Wages

The report does not mention the principal requisite to making the railroads a self-supporting industry under

private ownership—namely, an increase in freight traffic due to a revival of general business. The marked upturn in car loadings in the week ended July 20 may indicate that this has begun. In the two weeks ending July 13 car loadings had declined to only 54 per cent of the 1925-1929 average—relatively the lowest level in two consecutive weeks for two years. In the week ending July 20 they increased to 57 per cent of it, without any unusual cause for the change excepting apparently the beginning of an improvement in general business which the stock market has been forecasting almost ever since the Supreme Court's NRA decision.

An important factor in the railway situation which the committee did not emphasize, but mentioned as quoted above, is that the employees of competing forms of transportation "on the average receive much less compensation for their services," and their labor relations are, in large part, unregulated. In its December 1 issue the *Railway Age* showed that the average weekly earnings of passenger locomotive engineers were 99 per cent greater than those of inter-city bus drivers; average weekly earnings of freight locomotive engineers 117 per cent greater than those of inter-city truck drivers; and average weekly earnings of railway machinists 6½ per cent greater than those of truck mechanics. This was before railway wages had been fully restored to their pre-depression basis.

A report of the National Industrial Conference Board shows that in June average hourly earnings of workers in 25 large industrial groups were 59.9 cents. This compares with present average hourly earnings of railway employees of 69½ cents, or 16 per cent higher. If the railways were paying only the same average hourly wage as these other industries their operating expenses would be running about $265,000,000 annually less than they are—an amount equivalent to 34 per cent of their total fixed charges, although the labor leaders claim high fixed charges are the principal thing the matter with the railways.

How to Avoid Government Ownership

How, then, make the railways a self-supporting industry, and thereby prevent government ownership? First, revive production and commerce, and thereby railway traffic. Second, pass legislation which will correct the inequalities and inequities in transportation competition created by government policies so forcibly described, and by implication condemned, in the report of the House Committee on Interstate and Foreign Commerce. Congress has pending before it the Pettengill long-and-short-haul bill, the bus-truck bill and the waterway bill. Their passage would do much to equalize the terms of competition in transportation. The government's policy of subsidizing transportation by waterway and highway, which the committee emphasizes, is as unfair and unsound, however, as its policy of unequal regulation and abolition of it is as desirable in the public interest. Third, establish approximate equality in wages between the railroads and other industries, and especially between them and competing carriers. To the activities of railway employees and former employees, and especially of the leaders of their national and state organizations, are largely due the illuminating and constructive report submitted by the House committee. It remains a fact that without a large increase in traffic and gross earnings, most railways cannot long continue to pay the present scale of wages without becoming bankrupt; and general railroad bankruptcy is the shortest road to government ownership.

The way, and the only way, to avoid government ownership is for government and management to adopt policies that will make the railways a self-supporting industry under private ownership. The report of the House Committee on Interstate and Foreign Commerce is a very encouraging indication that this will be done.

Six Years of Machine-Tool Progress

Of all the problems in railroad operation there is none of greater magnitude, viewed from the standpoint of operating expenditures, than that involved in the maintenance of equipment. Twenty-seven per cent of the money spent for operation is used for this purpose. In normal times this amounts to an average of over one billion dollars a year. If economies are to be effected in the maintenance of equipment and if the unit costs of repairs are to be kept within proper relation to other costs as rail traffic increases, management must take steps to familiarize itself with recent developments in facilities which will contribute to such an end.

Locomotive repairs, the cost of which amounts to over four hundred million dollars a year in normal times, is now the largest single item of operating expense and presents a logical starting place in any consideration of ways and means to reduce operating costs. The problem of cutting repair costs involves two principal factors with which management must deal: One, the economies that may be effected by the introduction of motive power of modern design, and, the other, economies which are intimately related to shop and enginehouse facilities. This latter factor is of particular importance in connection with the older power which must go to the shop more frequently than the newer power.

With a few outstanding exceptions, the average locomotive shop in this country can hardly be called modern. The equipment, in most instances, was designed and installed twenty or more years ago. The importance of improving shop facilities can best be appreciated when it is considered that such improvements begin to return savings immediately they come into use and, as new motive power is introduced, it can

be done with the confidence that the lower repair costs inherent in modern locomotive design, the economies in operation on the road, and the lowest possible costs of doing back-shop and enginehouse work will all contribute to lower operating expenses.

During the six years which have elapsed since 1929—years in which necessity has forced the railroads to make drastic retrenchments in expenditures for new facilities—the machine-tool industry has been busy in the development of new designs, many of which are superior in productive capacity and in machine operating and repair costs to any machine built from ten to twenty years ago. During this same period experience with comparatively modern motive power has brought home the value of the newer locomotive designs so that railroad men are well informed of the developments in the motive-power field. This has not been true, however, in the field of maintenance facilities.

The opportunity to see the extensive development work that the machinery manufacturers have done during this period of business stagnation will be presented by the Machine Tool Show to be held at Cleveland, Ohio, from September 11 to 21 of this year. It is anticipated that this exhibition will be one of the most elaborate displays of machines and accessories ever held. It will afford railroad men, as well as all other users of shop machinery, an exceptional opportunity to study the progress in this field and to compare the ability of today's machine-tool equipment to perform machining operations more efficiently and at a lower cost than the tools which are now in service in the typical railroad shop.

Indexes to Volume 98

The indexes to the latest volume of the *Railway Age*, January to June, 1935, are now ready for distribution and copies may be had by those subscribers desiring them. Requests should be addressed to the Circulation Department, *Railway Age*, 30 Church street, New York. Subscribers who have in previous years made application for the index need not apply again; they will continue to receive it as long as they continue to subscribe.

* * * *

This cartoon was received by *Railway Age* with a letter from Kansas City, Mo., which included the following comment:

"Quite recently one of our local papers used column after column to advise the public of the fact that the first barge was coming up the Missouri River with newsprint paper, which came down the Great Lakes to Chicago, thence to St. Louis and up the river to the "port" of Kansas City.

"The point is this: There was no morning paper available on a 100 m.p.h. streamlined train due to the fact that the newsprint hadn't yet arrived. This barge finally happened to arrive at flood time. The next movement will depend upon another flood!"

Northern Pacific Roller-Bearing Locomotive Overhauled

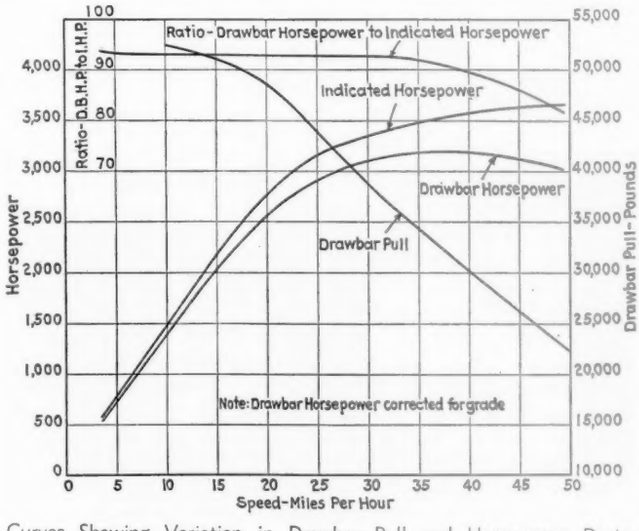
Bearings of Locomotive 2626, formerly Timken Locomotive 1111 found in excellent condition after 280,000 miles.

PRIOR to delivery on the Northern Pacific on October 27, 1931, Timken Locomotive 1111* had made 88,992 miles in test service on 12 other roads. The locomotive was tested on the Northern Pacific and purchased on February 6, 1933, after which it was designated No. 2626. It was placed in regular fast passenger service and subsequently developed a total of over 280,000 miles, up to October, 1934, when it was necessary to send the locomotive to South Tacoma shops for general repairs to the boiler and machinery.

This was the first general shopping which the locomotive had received since being built and it was, therefore, deemed advisable to remove all roller bearings on the engine truck, driving wheels and trailer wheels for a thorough check to determine their physical condition. On examination, all Timken roller bearing assemblies were found to be in excellent condition and were returned to service, with the exception of the main driver bearing cones which had to be renewed on account of replacing the 11½-in. main driving axle with a 12-in. axle. However, the old cups and the old rollers which had carried the load for 280,000 miles were reapplied for further service.

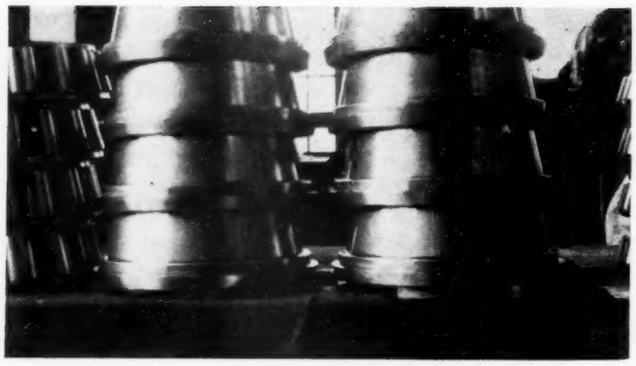
The main driver axle was redesigned in accordance with the practice developed by the photoelastic studies on railroad axles and wheels conducted by The Timken Roller Bearing Company at the University of Michigan. A raised seat was provided for the bearing cone and stress relief grooves were provided in the wheel hub and in the bearing cone. The new main axle was tapered both ways from the center to give a uniform stress gradient throughout its entire length.

Engine Truck.—The cones, rollers and cups were in satisfactory condition for further service, examination showing only a few thousandths of an inch wear, if any. The housings showed from 0 to 5/64 in. wear in width and the trunnion boss 1/32 in. to 5/32 in. in diameter wear. All enclosures and spacers were in good condition. The trunnion guides were worn slightly and the pedestal



Curves Showing Variation in Drawbar Pull and Horsepower During Dynamometer Car Tests of Locomotive 2626 in Freight Service between Pasco and Lamont, Wash.

* Described in *Railway Age* of May 24, 1930, and February 13, 1932.



The Main Driver Bearing Cones, Also Found in Excellent Condition after 280,000 Miles

opening increased 1/32 in. to 1/16 in. Necessary corrections in wear-plate thickness were made.

Driving Wheels.—The cones, rollers and cups were found in good condition, with the bearing wear hardly measurable. All housings were satisfactory except for a slight increase in cup seat diameter due to the lateral-motion rollers being worn into the front housing 1/16 in. to 5/32 in. Some enclosure bolts were broken and worn bolt holes in the left main were built up and redrilled. All spacers were satisfactory, but the left main was renewed with oversize spacers to reduce the enclosure clearances. Trunnion guides and pedestal liners on both main jaws were galled and had to be renewed. All other guides and liners were in excellent condition, with no wear indicated on the boxes and flanges.

Trailer Axles.—Cones, rollers and cups were found in satisfactory condition for further service, with the bearing wear slight, if any. The trailer housings were in good condition, with wear in width not exceeding 5/64 in. Trailer enclosures were satisfactory, except for the left front which was .042 in. large in the vertical bore. One liner on the right front jaw was cracked at the flange, and the pedestal openings showed 1/16 in. wear. This condition was corrected by the application of new wear plates. All rollers on the front trailer lateral-motion device were in satisfactory condition.

Tender Axles.—All bearings were in good condition. All housings were worn slightly on the pedestal faces, being built up by autogenous welding.

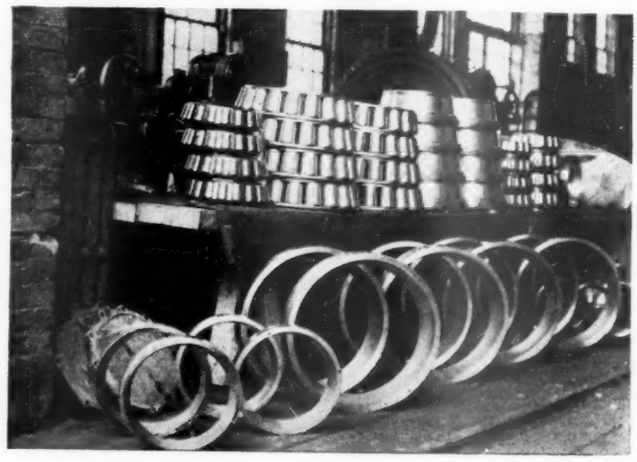
The foregoing indicates in some detail the wear which developed in these roller bearings after 280,000 miles of service. A certain amount of microscopic wear on the cones, rollers and cups, sometimes called "water etching" and thought to be due to the action of water which gradually accumulates in the oil reservoirs, was observed. Provision has been made for the application of drain plugs and periodic replacement of oil to prevent this condition. It is anticipated that these Timken roller bearings may have a further service life sufficient to make the total service exceed 1,000,000 miles.

Service Record of Northern Pacific Locomotive 2626, Formerly Timken Locomotive 1111

Mileage in test service on 12 other roads		89,992
Locomotive received on Northern Pacific line, October 27, 1931		
Right main crank pin failed due to overheating, March 12, 1932		
Mileage from October 27, 1931 to March 12, 1932		30,515
Locomotive purchased by the Northern Pacific, February 6, 1933		
Shopped for repairs to boiler in April and May, 1933		
Given Class 5 repairs, including tire turning, January, 1934		
Mileage from March 12, 1932, to general shopping, October, 1934:		
August, 1932	4,684	
September	5,819	
October	7,337	
November	3,459	
December	3,289	
January, 1933	6,134	
February	7,699	
March	2,678	
April	—	
May	—	
June	7,913	
July	9,374	
August	10,198	
September	5,342	
October	9,868	
November	9,869	
December	7,887	
January, 1934	—	
February	7,488	
March	8,765	
April	2,796	
May	5,613	
June	6,666	
July	10,196	
August	9,871	
September	7,729*	160,672
Total		280,179

* Sent to South Tacoma shops for heavy repairs to boiler and machinery in October.

Main Driving Wheel Bearing Rolls and Cages, Removed, Cleaned and Ready for Inspection



Timken Engine-Truck, Driver and Trailer Roller Bearings, Removed from Locomotive 2626 after 280,000 Miles of Service

Beginning in August, 1932, Locomotive 2626 was used in passenger service on Trains 1 and 2 between Seattle, Wash., and Yakima, doubling the division each day for a round-trip distance of 326 miles. The locomotive is now used on Trains 1 and 2 between Seattle and Missoula, Mont., a distance of 656 miles. This route comprises five former engine districts and is featured by a limited amount of 2.2-per-cent grade, on which the locomotive can handle nine cars. Inasmuch as 16 cars must be hauled on some days, a Mikado helper is provided over the Cascade Range between Lester, Wash., and Easton, and over the Coriacan Defile between Dixon, Mont., and Missoula.

In test passenger service, the locomotive has averaged

17.85 lb. of coal per passenger car-mile and shown an average evaporation of 4.81 lb. with Roslyn coal, a western bituminous coal having an average heat value of 11,300 B.t.u. On one long run of 906 miles from Missoula to Jamestown, N. D., the locomotive made the run in 25 min. less than the schedule time for the district. On another run of 346 miles from Jamestown to St. Paul, hauling 10 cars, 57 min. lost time was made up, the average speed for the entire distance being 50 m.p.h. During part of this run, a distance of 45 miles was made up a 0.4-per-cent grade in 47 min.

The locomotive also gave a good account of itself in preliminary freight service tests on the Northern Pacific, during which a total of 7,093,662 gross ton-miles were handled at an average rate of 53,670 gross ton-miles per train-hour. The average speed was 28 m.p.h., the coal consumption was 93.25 lb. per 1,000 gross ton-miles and the average evaporation 5.07 lb.

The test performance chart reproduced with this article shows the indicated and the drawbar horsepower developed at various speeds during a large number of dynamometer test trips between Pasco and Lamont, Wash. It will be noted that the ratio of drawbar pull at the tender of the locomotive to the indicated horsepower developed in the cylinders was over 90 per cent at all speeds up to 40 m.p.h., and at higher speeds decreased gradually. The variation in drawbar pull, from a maximum of 52,500 at 10 m.p.h. to 20,250 at 50 m.p.h., is also shown on the chart.

A. C. L. Employees Keep Communities Rail-Minded

THE Wilmington District Employees Service Club of the Atlantic Coast Line, as a part of its continuing public relations activities, recently sponsored an essay contest designed to promote a better understanding of the value of railroads to a community. The assigned subject was "What Does the Railroad Mean to Our City?" and a total of $300 in cash was awarded to winners of first and second prizes in each of six groups.

The groups into which the contestants were divided, and the prizes in each, were as follows:

Group No. 1—All adults residing in Wilmington, N. C., and vicinity, except railroad employees. First prize, $50; second prize, $25.

Group No. 2—Grammar school students, Wilmington and vicinity. First prize, $20; second prize, $10.

Group No. 3—New Hanover (Wilmington) High School students. First prize, $30; second prize, $15.

Group No. 4—Atlantic Coast Line employees in Wilmington and at Wilmington District points, First prize, $50; second prize, $25.

Group No. 5—School students, grammar and high, residing at points within the Wilmington District. First prize, $15; second prize, $7.50.

Group No. 6—Adults (except railroad employees) residing at points within the Wilmington District. First prize, $35; second prize, $17.50.

The stated purpose of the contest was to mitigate somewhat present conditions wherein, "So few people realize the tremendous value of our railroads from a transportation and economic standpoint, and the fact that they are our largest taxpayers, large purchasers of materials, etc., and employers of various kinds of labor, skilled and unskilled, with consequent large payrolls." Participants were given a month in which to submit their essays—the original announcements were issued on March 31 and April 30 was the closing date. The contest was given wide publicity through newspaper advertisements, press releases and circulars posted at various A. C. L. stations in the Wilmington District.

A total of approximately 400 essays was submitted—a response which the committee in charge regarded as a display of "much interest and enthusiasm," and the Service Club is therefore gratified "over the results obtained in attempting to create a closer relationship between the public and the railroads." One of the three judges—W. H. Montgomery, executive director, Brigade Boy's Club, Wilmington, N. C.,—stated that "the hundreds of essays submitted were excellent, the caliber of which made it exceedingly difficult to judge" and added an expression of his confidence that "the contest has been instrumental not only in focusing the attention of railroad employees on the vast community assets of railroads, but has impressed our citizenship with the fact that our railroads are absolutely indispensible to the welfare and life of every community." Other judges were Louis T. Moore, executive secretary, Wilmington Chamber of Commerce, and Robert Scott, director of insurance and safety of the A. C. L.

That the Service Club's educational activities of the past five years have been effective is indicated by the theme of winning essays. All of the successful contestants appear to have been well informed on the ramifications of a railroad and its service—of its contribution to the economic well-being of a community and its citizens.

Among other recent educational activities of the Service Club has been the publication of a series of newspaper advertisements in which are reproduced excerpts from current editorials and speeches on general railroad problems; unfair competition of non-regulated and subsidized carriers; the loss to communities from railway abandonments; the burden of railway taxes, etc. In this series are included excerpts from addresses by J. J. Pelley, president of the Association of American Railroads; and quotations from editorials and articles which have appeared in the New York Times, the Chicago Tribune and other publications.

Wood Preservation Gains 34 Per Cent in 1934

THERE was a sharp increase in the quantity of timber given preservative treatment in the United States in 1934, according to figures compiled by R. K. Helphenstine, Jr., Forest Service, United States Department of Agriculture, in co-operation with the American Wood-Preservers' Association. As in previous years, the railway industry maintained its status in 1934 as the principal consumer of treated timber. Ever since the compilation of these statistics was started in 1909, crossties have comprised the bulk of the wood given preservative treatment, although their relative position dropped from 54 per cent in 1933 to 51 per cent in 1934. Crossties and switch ties combined amounted to slightly more than 55 per cent of the total.

The total quantity of timber given preservative treatment in 1934 amounted to 168,438,214 cu. ft., which represents an increase of 42,482,386 cu. ft., or 33.7 per cent, as compared with the quantity treated in 1933. As

compared with the peak year of 1929, however, it comprises a decrease of 53.6 per cent. Increases were registered in all of the eight classes of material treated, the largest percentage of increase being in wood blocks, 168 per cent, or more than 2½ times the quantity treated in 1932. Miscellaneous material ranked second with an increase of 66 per cent. Cross arms were third with an increase of slightly less than 66 per cent. Poles, piles, construction timbers, crossties and switch ties came next in the order named, none of which showed an increase of less than 25 per cent, as compared with 1933. This total volume of wood treated is greater than for any year prior to 1923, except 1921 and 1922 when the quantity treated was slightly above that of 1934.

Crossties given preservative treatment last year totaled 28,459,587, as compared with 22,696,565 in 1933, a gain of 25 per cent. Of this total, slightly more than half were sawed ties. During the year, 81,341,922 ft.b.m. of switch ties received preservative treatment, as compared with 65,163,331 ft.b.m. of this class of material during the previous year, a gain of about 25 per cent.

There was a marked increase in the volume of piles treated in 1934, the increase being 3,600,564 lin. ft., thus bringing the total for the year to 12,773,435 lin. ft., or a gain of 39 per cent, as compared with 1933. Almost 80 per cent of all of the piles treated during the year were southern pine, the total quantity of this species being 10,115,339 lin. ft. Douglas fir came second with 2,320,861 lin. ft., the remainder, 337,235 lin. ft., being made up of miscellaneous species.

It is interesting to note that only 106,232 lin. ft. of piles were treated with preservatives other than creosote.

For many years oak ties have ranked first in the number treated, with southern pine occupying second place. In 1934, this position was reversed and southern pine occupied first place, the total being 10,658,903, or 37.5 per cent of all ties treated. Oak ranked second with 8,580,548, or 30.1 per cent, the third in rank being Douglas fir with 2,816,104 ties, or 9.9 per cent. Among the other woods represented were gum, beech, maple, birch, tamarack, lodge pole pine, ponderosa pine and elm in the order named. All other woods taken collectively amounted to 162,546 ties, or only 0.6 per cent of the total number treated.

Of the 28,459,587 ties treated during the year, 17,890,819, or 62.9 per cent were treated with creosote; 8,887,936 ties, or 31.2 per cent, were treated with creosote-petroleum mixtures; while only 5 per cent were treated with zinc chloride, and 0.9 per cent were treated with miscellaneous preservatives. All but 1,410 of the ties treated during the year were given pressure treatment. Of the total number of ties treated, 19,224,818 were adzed and bored before treatment; 1,217,514 were bored but not adzed, 472,064 were adzed without being bored; and 7,545,191 ties, or less than 25 per cent, were neither adzed nor bored.

In the case of switch ties, from the standpoint of quantity treated, oak, ranked first with a total of 44,655,778 ft.b.m., or nearly 55 per cent. Southern pine ranked second with 14,230,693 ft.b.m., or 17.5 per cent, and Douglas fir was third with 10,682,265 ft. b.m., or slightly more than 13 per cent.

Creosote consumed in the preservation of timber in 1934 amounted to 119,049,604 gal., an increase of 33,868,895 gal. or almost 40 per cent, as compared with 1933. This is the largest consumption since 1931 and is larger than for any year prior to 1923, although it is well below the 226,374,227 gal. consumed in 1929, the peak year. Of the total creosote consumed in 1934, only 23,545,222 gal. was imported, 95,504,382 gal. being of domestic origin. The consumption of zinc chloride continued to decline, the 3,222,721 lb. consumed in 1934 compares with 4,991,792 lb. in the previous year and with 51,375,360 lb. in 1921, the year of greatest consumption. The consumption in 1934 is the smallest since this record was started in 1909.

The quantity of petroleum consumed by the wood preserving industry in 1934 was 14,981,299 gal., as compared with 13,230,745 gal. in 1933, an increase of 1,750,554 gal., and with 29,656,181 gal. in 1929, the year of largest consumption. The consumption of miscellaneous salts increased from 627,201 lb. in 1933 to 805,150 lb. in 1934.

The number of treating plants in the United States in 1934 was 209, or 1 less than in 1933. Of this number, 187 were in active operation, the same number as in 1933, and 22 were idle. Four new plants of the pressure type were constructed during the year and five plants were abandoned, of which four were of the non-pressure (open tank) type. Of those in active operation, 126 were pressure-cylinder plants, 45 were non-pressure plants and 16 were equipped for both pressure and non-pressure treatment. Of the 209 plants in existence in the United States at the close of 1934, 154 were commercial plants which treat wood for sale or by contract, 28 were owned and operated by railroads and 27 belong to public utility corporations, mining companies or the federal government.

Wood Preservation, 1909-1934

Together with consumption of creosote and zinc chloride

Year	Total Material Treated Cu. Ft.	Number of Crossties Treated	Creosote Used, Gal.	Zinc Chloride Used, Lb.
1909	75,946,419	20,693,012	51,426,212	16,215,107
1910	100,074,144	26,155,677	63,266,271	16,802,532
1911	111,524,563	28,394,140	73,027,335	16,359,797
1912	125,931,056	32,394,336	83,666,490	20,751,711
1913	153,613,888	40,260,416	108,378,359	26,466,803
1914	159,582,639	43,846,987	79,334,606	27,212,259
1915	140,858,963	37,085,585	80,859,442	33,269,604
1916	150,522,982	37,469,368	90,404,749	26,746,577
1917	137,338,586	33,459,470	75,541,737	26,444,689
1918	122,612,890	30,609,209	52,776,386	31,101,111
1919	146,060,994	37,567,247	65,556,247	43,483,134
1920	173,309,505	44,987,532	68,757,508	49,717,929
1921	201,643,228	55,383,515	76,513,279	51,375,360
1922	166,620,347	41,316,474	86,321,389	29,868,639
1923	224,375,468	53,610,175	127,417,305	28,830,817
1924	268,583,235	62,632,710	157,305,358	33,208,675
1925	274,474,538	62,563,911	167,642,790	26,378,658
1926	289,322,079	62,654,538	185,733,180	24,777,020
1927	345,685,804	74,231,840	219,778,430	22,162,718
1928	335,920,379	70,114,405	220,478,409	23,524,340
1929	362,009,047	71,023,103	226,374,227	19,848,813
1930	332,318,577	63,267,107	213,904,421	13,921,894
1931	233,334,302	48,611,164	155,437,247	10,323,443
1932	157,418,589	35,045,483	105,671,264	7,669,126
1933	125,955,828	22,696,565	85,180,709	4,991,792
1934	168,438,214	28,459,587	119,049,604	3,222,721

Classes of Material Treated in 1934

Class of Material	Cubic feet	Per cent of total
Crossties	85,378,761	50.7
Switch ties	6,778,494	4.0
Piles	8,638,674	5.1
Poles	45,402,931	27.0
Wood blocks	1,042,902	0.6
Cross arms	518,988	0.3
Construction timbers	15,285,484	9.1
Miscellaneous	5,391,980	3.2
Total	168,438,214	100.0

Treatment of Miscellaneous Material (Ft.b.m.)

	1934	1933	1932	1931
Lumber	42,879,728	22,200,171	33,994,619	43,119,020
Fence posts	8,462,601	7,385,168	2,995,174	13,468,058
Tie plugs	2,092,863	1,406,979	652,489	1,149,058
Crossing plank	135,006	1,272	392,830	2,248,946
Car lumber	506,552	3,939	.....	.....

Effect of Depression on Employee Earnings

Co-ordinator's study finds annual average for 1933 about $1225

WASHINGTON, D. C.

THE Section of Labor Relations of Co-ordinator Eastman's staff (O. S. Beyer, director) has submitted a report on the annual earnings of railroad employees from 1924 through 1933. The information contained in the report was obtained by a study undertaken under Section 13 of the emergency railroad transportation act, 1933, which, among other things, authorizes and directs the co-ordinator to investigate "the stability of railroad labor employment and other improvement of railroad labor conditions and relations." The study was instituted primarily to obtain the basic data necessary in the formulation of plans for the protection of employees in connection with retirement, unemployment, and the like, and incidentally the information in regard to annual earnings was secured. Other phases of the study are to be included in other reports.

A comprehensive survey of the histories of some 400,000 empoyees who had seen railroad service between 1924 and 1933 was made, with the co-operation of the railroads. The survey was financed by special funds supplied by the Civil Works Administration, and provided temporary employment for approximately 2,000 men and women, recruited largely from among furloughed railroad clerks.

"The report shows how the annual earnings of railroad employees have been affected by changing economic conditions during the last ten years," says Co-ordinator Eastman in an accompanying statement. "Heretofore analyses of the wage situation in the railroad industry have been largely dependent upon a study of rates of pay. This report now makes available for the first time a comprehensive series of earnings statistics showing what these rates of pay have meant to employees in the industry in terms of actual yearly incomes. A rate of pay indicates only what a worker would receive if he were fully employed. The data contained in this study reflect not only rates of pay but also the consequences of shortened time and unemployment. The facts presented should contribute to an understanding of the railroad wage problem."

The conclusions are drawn that minimum wage rates should be adopted for the lower-paid classes of employees, particularly in the maintenance service, and that a system of unemployment insurance should be established for their protection. An abstract of the summary and conclusions follows:

A necessary part of the survey covered the annual earnings of those employees for whom annual earnings records were available. Thus, before pension, unemployment insurance or dismissal compensation measures can be formulated or criticized it is necessary to know what benefits they will make possible to various classes of employees, and annual earnings are basic in the determination both of such benefits and of the costs of providing for them.

In other respects an adequate knowledge of the annual earnings of railroad employees is of great value. Such knowledge sheds much needed light on an aspect of the general wage question concerning which there is a paucity of reliable data,—namely, how the yearly wage incomes of various occupational groups of employees are actually affected by changing economic conditions. Without such information it is difficult to appraise the wage problem of the railroad industry, especially as it relates to the welfare and morale of the employees, to operating costs, and to the well-being of a society so largely dependent upon adequate transportation services at reasonable rates.

Rates of pay, particularly in the railroad industry, are usually a matter of record, and it is fairly easy to make compilations based upon them. Accurate statistics of annual earnings, on the other hand, depend upon records of individual employees kept over a fairly long period of time, and the magnitude of the task of collecting and tabulating data from records of this type has ordinarily made impossible the study of annual earnings on any large scale.

Most annual earnings data are therefore compiled from records of the number of employees and the total compensation paid as reported by individual firms. Average annual earnings cannot be accurately built up from wage material in this form because the number of employees for the year is usually an average of monthly counts and is therefore often less than the number of men on the payroll, even after making allowance for turnover. This follows because an employee who is furloughed, discharged, or unemployed for any other cause, is not included in the sum of the monthly counts upon which the annual average is based during those months in which he is unemployed. A computation of annual earnings based on an average monthly count of employees tends, therefore, to approximate full time earnings, and results in an amount which is too high during normal times and exceeds actual annual earnings by an even greater margin during times of widespread unemployment.

The statistics of annual earnings presented in this report are based upon individual records obtained for nearly 300,000 employees on 14 railroads over the 10-year period from 1924 through 1933. These 14 railroads[1] account for about one-quarter of the employees of all Class I railroads in the United States. No part time employees or earnings were included in the averages for any given year when the part time resulted from an initial entry into the industry or final separations from it during that year.

The earnings series that have been compiled from these records indicate that in 1933 nearly 20 per cent of all railroad employees received less than $600 and about 50 per cent received less than $1,200. Annual earnings decreased on the average by about one-fourth between 1929 and 1933. Unemployment was an even greater factor than wage cuts in producing this decline, and the burden of the depression was so unevenly distributed that those who could least afford reduction in their wage incomes endured the greatest wage losses. It should be borne in mind that the data in this report represent earnings of railroad employees during the period of their attachment to the industry. The figures themselves reveal nothing of the plight of the hundreds of thousands who were more or less permanently separated from railroad service during the years since 1929.

Trend of Railroad Employment

The decline in the total number of railroad workers was sharply accentuated by the depression, but had begun several

[1] Boston and Maine, Boston & Albany, Delaware & Hudson, Central Railroad of New Jersey, Atlantic Coast Line, Baltimore and Ohio, Chicago, Burlington & Quincy, Northern Pacific (except Eastern Grand Division), Minneapolis, St. Paul and Sault Ste. Marie (line in U. S.), Kansas City Southern, Atchison, Topeka and Santa Fe, Texas and New Orleans, Southern Pacific (Coast Division, California), and Oregon Short Line.

years before 1929. The greatest employment ever recorded on the railroads was in the month of August, 1920, when the Interstate Commerce Commission found that 2,197,000 men and women were at work. The reduction in the number of employment opportunities during the calendar year 1921, immediately following this peak, amounted to about 350,000, a larger reduction than in any single depression year since 1929. Employment increased to an extent thereafter, and the average number on the middle of the month in 1926 was 1,805,870.

Between 1926 and 1929 the number of railroad jobs shrank by more than 150,000. The depression transformed this steady decrease into a rapid fall. During the next 4 years more than 600,000 job opportunities were lost to railroad workers,—250,000 in 1930, 220,000 more in 1931, and 140,000 in 1932. The employment trend leveled off in 1933 at about 1,000,000 workers, and moved slightly upward in 1934. Some of those who were displaced during the depression found jobs in other industries, but the proportion could not have been large at a time when almost all types of employment were being sharply reduced.

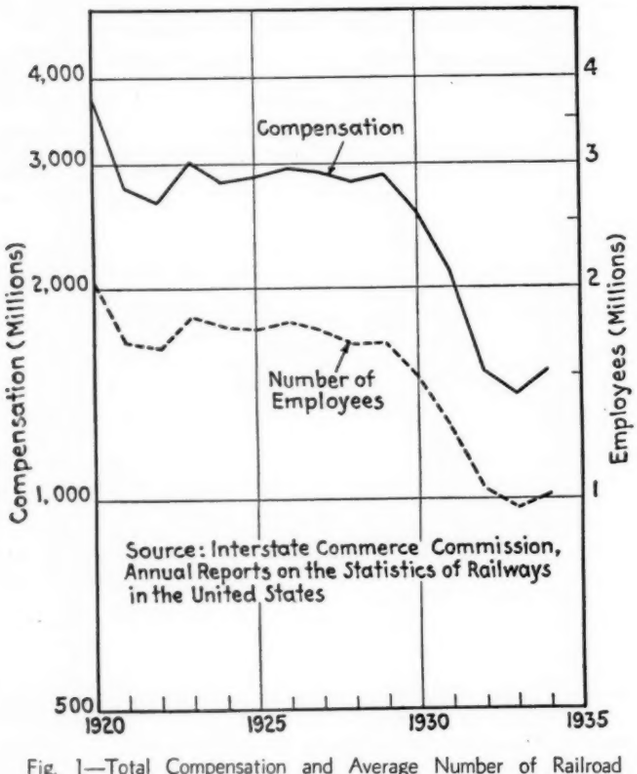


Fig. 1—Total Compensation and Average Number of Railroad Employees, All Class I Roads, 1920-1934 (Switching and Terminal Companies Excluded)

Because of the operation of the seniority principle, most were junior men.

The decrease in employment since 1929, was of course accompanied by a rapid decline in payrolls. In 1929 all Class I railroads paid out $2,896,566,000 in wages and salaries. This total was reduced by 27.7 per cent to $2,094,994,000 in 1931, and 51.5 per cent to $1,403,841,000 in 1933. By 1933 railroad employment and total salaries and wages paid had reached the lowest point since 1915. (See Fig. 1 for railroad employment and compensation since 1920.)

Level of Railroad Employee Earnings in 1933

Average annual earnings of employees on all Class I roads were determined for this study by weighting the averages obtained from the original data by the average number of employees in each occupation from the wage statistics of the Interstate Commerce Commission. By this method it was estimated that the employees of all Class I roads earned $1,310 on the average in 1933, and that the average dropped to $1,265 when executives and their assistants were excluded. (See Fig. 2.)

Since records kept by railroads for income tax purposes constituted the principal source of these earnings statistics, many low earnings, particularly in the labor service groups, i.e., trackmen, shop laborers, dock laborers, etc., could not be secured. Furthermore, some of those employees who were furloughed in 1933, and therefore received part time earnings during that year, should have been included in the computation of the 1933 averages, because they returned to service in 1934. Their inclusion was not possible, however, since the data collected did not extend beyond 1933. For these reasons the final averages obtained were somewhat too high. After making adjustments for this upward bias it is estimated that the employees on all Class I railroads, except executives and their assistants, actually averaged less than $1,225 in 1933.

Except for executives and their assistants, whose annual earnings in 1933 were $5,250,[2] train and engine service employees are the highest paid group in railroad service. They averaged $1,745 in 1933. The highest paid employees within this group were road passenger and freight engineers and motormen, who earned $2,245 on the average in 1933.

Employees in the maintenance of way and structures group, about two-thirds of whom were section laborers in 1933, are the lowest paid among the seven principal occupational groups. Those whose records were obtained earned $835 on the average in 1933. This amount is from $50 to $100 higher than the actual average of maintenance of way and structures employees on all Class I roads in the year in question, since records of those in the lowest wage brackets were not secured.

Employees engaged in maintenance of equipment and stores averaged $1,110 in 1933; in transportation other than train, engine and yard service, $1,215. Yardmasters, switchtenders and hostlers earned $1,630 on the average in 1933; professional and clerical employees, $1,535; and executives and staff assistants, $5,250. These averages are approximately correct for employees of all Class I roads, except for the executive group, whose average earnings are overstated by about $225. Excluding the executive group, the highest paid employees in any single occupation were chief train dispatchers, who earned $3,160 in 1933. The lowest occupational average obtained was $540 for laborers on coal and ore docks and in grain elevators.

Distribution of Annual Earnings

It is estimated that nearly 20 per cent of all railroad employees received under $600 in 1933.[3] These were mainly section laborers and employees in other labor groups. They also included employees in higher paid occupations whose earnings were reduced by unemployment. Between 30 and 35 per cent of all railroad employees received between $600 and $1,200 in 1933; 29 per cent between $1,200 and $1,800; and 14 per cent between $1,800 and $2,400. About 7 per cent received $2,400 and over.

The proportion of employees receiving under $600 was more than twice as large in 1933 as in 1929, and three times as large as in 1924. About 34 per cent of all employees received under $1,200 in 1924, and 30 per cent in 1929, as compared with nearly 50 per cent in 1933. Employees earning $2,400 per year or more comprised 10 per cent of the total number in 1924, 14 per cent in 1929 and 7 per cent in 1933.

Decline in Employee Earnings During Depression

The average earnings of railroad employees declined between 1929 and 1933 by more than 24 per cent, but, because average earnings were affected by the changing proportions of high and low paid employees during the depression, the net decline was about 20 per cent. This situation came about because the railroads laid off a larger proportion of employees in low wage occupations after 1929 than in occupations in which earnings were relatively high.

Shop employees and others engaged in maintenance of equipment and stores had their earnings reduced more sharply by the depression than any other occupational group. On the average,

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[2] This group consists of two occupations: (1) executives, general officers and assistants; and (2) division officers, assistants and staff assistants. Their earnings vary so widely that median earnings are more significant than an arithmetical average. The median earnings of employees in the former occupation were $5,287 in 1933, and of employees in the latter occupation, $3,366.

[3] In 1933 more than 7 per cent of all railroad employees were receiving rates of pay to net about $650 per year or less for full time employment. See *Low Wages and Long Hours in the Railroad Industry*, Section of Labor Relations, Federal Co-ordinator of Transportation, Washington, D. C., 1935.

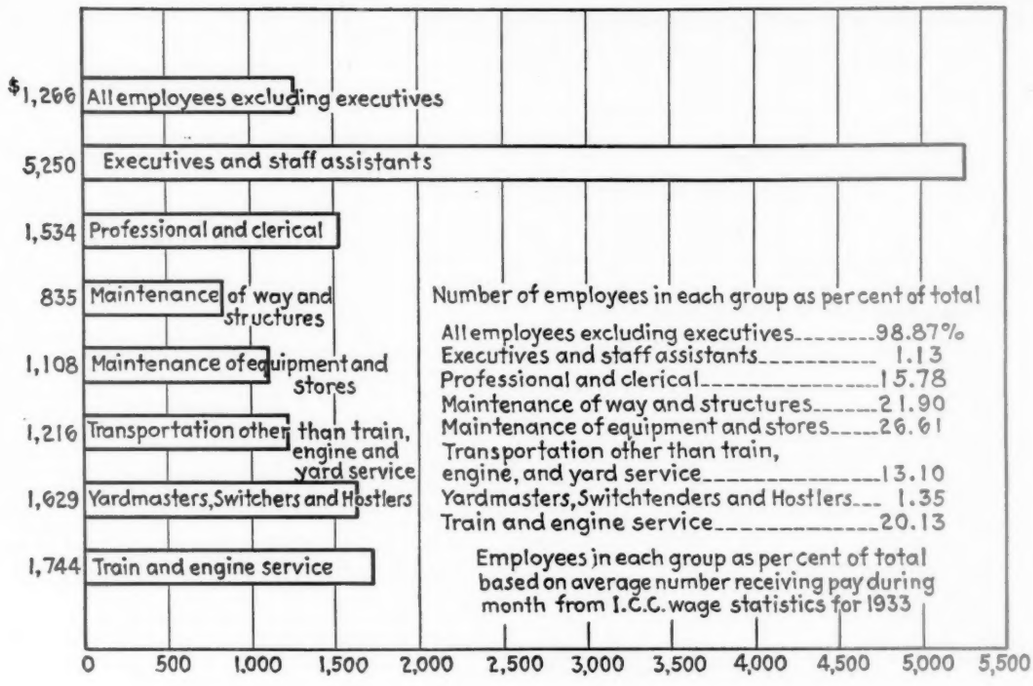


Fig. 2—Average Earnings of Railroad Employees, 1933

the annual earnings of employees in this group declined by nearly one-third from 1929 to 1933. Employees in train, engine and yard service received 20 to 24 per cent less in 1933 than in 1929. Those engaged in transportation service other than train, engine and yard received nearly 20 per cent less in 1933 than in 1929, and executives and assistants and employees in the clerical group, 13 per cent less.

It was found to be generally true that employees in the lower paid occupations suffered a greater proportionate decrease in their annual earnings during the depression than employees in the higher paid occupations. While the earnings of maintenance employees were from one-quarter to one-third less in 1933 than in 1929, the earnings of executives declined only about 13 per cent. Executives and their assistants did not reach their peak earnings until 1930, and in 1931 their earnings still averaged higher than in 1929. In the train service group firemen and brakemen suffered a greater loss in earnings than engineers and conductors.

Average Earnings by Age and Length of Service

Since the data upon which this report is based were originally collected for a study of the railroad pension problem, it was possible to compute average annual earnings of employees according to age and length of time spent in railroad service. These averages differ from those previously presented in that a different occupational classification has been used and the original data for the 14 railroads have not been adjusted by a weighting process.

The averages obtained showed striking differences between the earnings of short service and long service employees. In Fig. 3, average earnings by length of service have been charted for the six occupational groups for the year 1933. The chart shows that the earnings of the employees in two groups—executive, technical and clerical, and train and engine service—rise sharply and by almost constant percentages with increasing years of experience. Based on 1933 data, an employee in train and engine service may expect to receive about twice as much after 30 to 35 years of employment as employees with 10 to 15 years of service.

The railroad laborer cannot look forward in the same way to increased earnings after he has accumulated many years of experience. Based on the data shown for 1933, earnings tend to reach a peak for the laborer who has been on the railroad payroll from 10 to 15 years, to remain stationary for the next 10 years of service, and to decline thereafter. Since he has not been accumulating a stock of skill he can expect little reward after long service other than more regular employment.

The maintenance group includes both skilled and unskilled workers, and their earnings, according to age and length of service, reflect the differing values of skill and muscle. For both skilled and unskilled, earnings rise fairly rapidly until 10 to 15 years service is reached, then rise more gradually for the skilled worker, while for the unskilled they remain stationary for about 10 years, and then decline.

Over a period of years the alternation or depression and revival may destroy or enhance these "normal" expectations. Tabulations of the original earnings data by age as well as by length of service made it possible to follow the earnings of the same group of employees through the period covered by the study. Thus, maintenance employees with 5 to 9 years of service in 1925 averaged $1,400 in 1925, $1,630 in 1929 and $1,140 in

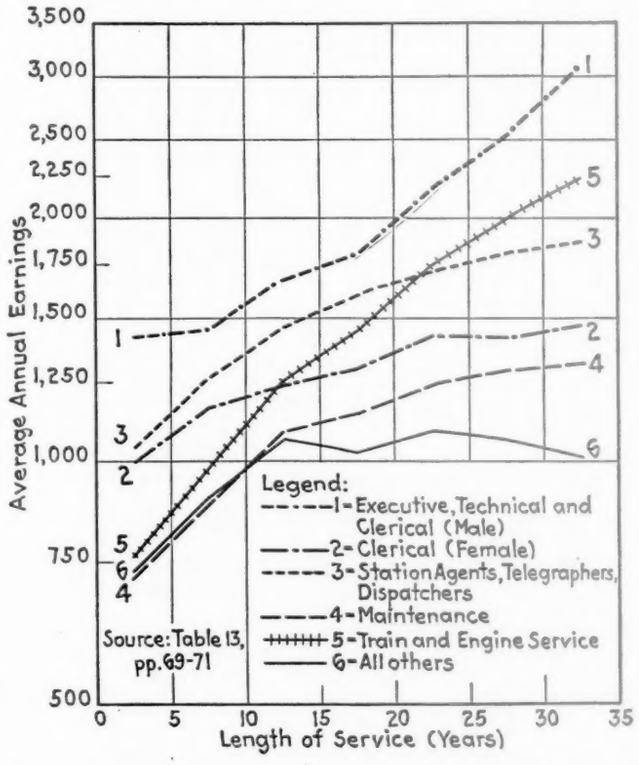


Fig. 3—Average Annual Earnings of Railroad Employees by Length of Service for Major Occupational Groups, 1933

1933. They had accumulated 9 additional years of experience by 1933, but their average earnings were nearly 20 per cent less in that year than they had been in 1925. Their earnings were 30 per cent less in 1933 than in 1929.

Train service employees with 5 to 9 years of service in 1925 earned $1,915 in 1925, $2,080 in 1929, and $1,445 in 1933. With 9 years additional service the earnings of this group of employees were 25 per cent less in 1933 than they had been in 1925. The earnings of long service employees in the train and engine group fluctuated less widely. Those with 20 to 24 years of service in 1925 averaged $2,530 in that year, $2,670 in 1929 and $2,230 in 1933. The decline in earnings for these employees between 1925 and 1933 was about 12 per cent.

Effect of Depression Upon Junior Employees

The operation of the seniority system has resulted in a measure of protection against loss of earnings of long service employees and has concentrated the wage losses due to the depression upon junior workers. This tendency was found to be most marked in the train service group. In 1933 employees in this group with 25 or more years of service received more than twice as much as those with 9 years of service or less. In the same year train and engine men with short periods of service did not earn much more on the average than maintenance employees and laborers, but the large number of depression furloughs greatly reduced the relative number of these short service workers in railroad employment.

In 1933 train and engine service employees with less than 10 years of service received about one-half the amount of earnings that those with the same length of service obtained in 1929. Employees with 25 to 29 years of service had their earnings reduced 25 per cent in the same period, and those with 30 years service or more, 17 per cent. Station agents, telegraphers and dispatchers with less than 10 years of service had their earnings reduced by nearly one-third between 1929 and 1933, while the earnings of those with 20 years service and over declined about 14 per cent.

There were not the same sharp differences between the earnings of older and younger maintenance employees during this period. Those with less than 10 years of service earned 40 to 45 per cent less in 1933 than in 1929. Those with 25 to 29 years of service earned 28 per cent less in 1933 than in 1929, and those with 30 years of service and over, 26 per cent less.

It should be remembered that the sharp decreases in earnings of short service employees occurred among a group whose numbers shrank rapidly as the depression advanced. This tendency existed even before 1929, since railroad employment had ceased to expand several years before. The average length of service of all railroad employees, as determined by a special study of 7 railroads, doubled between 1925 and 1933. In 1929 half of the maintenance employees on these 7 roads had between 9 and 10 years of service, while in 1933 half of them had from 13 to 14 years of service. Train and engine occupations contain a much larger proportion of long service employees than any other occupational group. In 1929 train and engine men on the 7 roads studied had 19 to 20 years of service, while by 1933 the median length of service had increased about 5 years. The difference in the age and length of service composition of the maintenance and the train service groups is responsible for the fact that although the earnings of short service employees engaged in maintenance did not decline as much between 1929 and 1933 as the earnings of similar employees in train and engine service, the average decline for all maintenance employees combined was greater than the average for all train service employees.

Influence of Unemployment and Wage Cuts on Earnings

It has been noted that the average earnings of all employees declined about 24 per cent between 1929 and 1933. The deductions from basic rates that went into effect February 1, 1932, amounted to 10 per cent, leaving 14 per cent as the decline in earnings due to unemployment and short time. While demotions severely reduced the earnings of individual employees, and in some instances reduced the occupational averages, their effect upon the group averages was slight.

Of the 14 per cent wage decline between 1929 and 1933 due to unemployment and short time, it is estimated that about 10 per cent was due to total unemployment and about 4 per cent to short time. Since there was some short time and unemployment in 1929, these percentages indicate only the additional short time and unemployment prevailing in 1933.

Studies carried on by the Co-ordinator concurrently with the present wage study and utilizing the same data disclosed a good deal of information on the amount of railroad unemployment. Seven railroads were selected for this study whose records were most complete.[4] Unemployment among railroad workers who kept their attachment to the industry was shown by this study to have increased slightly between 1925 and 1929. During these years from 6 to 8 per cent of all employees on the 7 roads studied were furloughed for periods of less than one year. These furloughs lasted on the average about 14 weeks. In 1930 more than 10 per cent were furloughed for periods under one year; in 1931, 15 per cent, and in 1932 20 per cent. The average duration of these furloughs was 14 weeks in 1930, 17 weeks in 1931, and 20 weeks in 1932.

Employees engaged in maintenance and in train service were more affected by unemployment than employees in any other occupational group. From 1925 to 1929 between 8 and 12 per cent of all maintenance employees were furloughed each year for periods of less than a year, while in 1932 nearly 27 per cent were given temporary furloughs. The duration of these temporary furloughs in 1932 averaged 19 weeks, slightly less than the average for all employees.

The train and engine group was second to maintenance-of-way employees and other laborers in the high proportion of furloughs, but average durations were even longer. For those laid off less than one year the average duration of furloughs was about 17 weeks from 1925 to 1929, and about 25 weeks in 1933. The employment record of laborers and train attendants was found to be slightly more favorable than that for all employees. The clerical groups, both male and female, fared somewhat better than the average, while the station agent, telegrapher and towerman group showed the most consistent record of continuous employment.

Interstate Commerce Commission Railroad Wage Data

This study confirms the conclusion of the Bureau of Statistics of the Interstate Commerce Commission that annual average earnings, obtained from Commission wage statistics and based on annual averages of employee counts made on the middle of the month, are higher than actual earnings. For all employees they are too high during good years by 4 to 5 per cent, and during years of business depression by 8 to more than 10 per cent. For most occupations they tend to be slightly less than full time earnings. This follows because annual earnings based on an average of mid-monthly counts rules out a great deal of the influence on earnings of unemployment. These averages exceed actual earnings by a greater amount for train and engine service employees than for any other occupational group.

In January, 1933, the Interstate Commerce Commission began a new count of the total number of employees on the payroll during the month, which was substituted for the count of full opportunity positions that had previously been made. Average annual earnings of all employees computed on the basis of this new count did not differ from the earnings obtained for this study by more than one or two per cent. This difference is largely accounted for by the extent to which the earnings of low paid employees were unrepresented in the data on which this study is based.

It can, therefore, be concluded that average earnings based on annual averages of the number of employees on the payroll during the month will be somewhat less than actual average earnings during a depression year and somewhat higher during a year in which there is little unemployment. Any annual average of monthly counts rules out some of the influence on earnings of unemployment, but this tends to be counteracted in the case of the new count of the Commission by the effects of turnover. For an occupation in which these two forces do not balance each other, an average based on the monthly payroll count will be higher or lower than actual earnings, depending upon whether unemployment or turnover has exercised the greater influence. In general, the new count of the Commission will permit a far more accurate measure of annual earnings than the middle of the

[4] An extended analysis of this data will appear in a forthcoming report on unemployment, by the Section of Labor Relations.

month count, which heretofore has been rather widely used for this purpose.

Comparison with Data in Other Industries

The data on average annual earnings contained in this report cannot be compared with earnings data for employees in other industries without great caution and considerable qualification. In the first place, other series of average annual earnings built up from records of individual employees, as has been done in this study, are almost non-existent. Exact comparisons are therefore impossible.

Many studies of annual earnings that have been made cover specified payroll periods only, and annual earnings can only be estimated from them. The effect upon earnings of unemployment, except of very short durations, is thus eliminated in arriving at such an estimate. Almost all other series of annual earnings depend upon a division of total compensation received during a given year by an *average* number of employees during the year. The objections to averages of this type when used to indicate the annual earnings of full and part time employees combined have already been indicated. They are very widely used, because few statistics of annual earnings of any other type are available. They almost always result in averages which are higher than the actual average income which a given group of employees receives from a particular industry. The statistics of average annual income from salary and wage earnings contained in the Department of Commerce's study of "National Income, 1929-32," are almost all of this latter type. It is for this reason that the authors of the above study in referring to certain of these averages warn that they "refer largely to earners employed full time; and *should not be interpreted as an average payment made to each earner on the payroll.*"

It follows, therefore, that a comparison of the earnings data contained in this study with most of the annual earnings series that have been compiled for employees in other industries will be less favorable to railroad workers than is actually the case. Exact comparisons must wait until it is possible to develop other similar series of employee annual earnings.

Other Studies of Earnings

A separate study has been prepared by the Co-ordinator of railroad employees who received a basic rate of 35 cents an hour or less during the payroll period nearest November 4, 1933. This study showed that 155,540, or more than 15 per cent of all railroad employees, received these low rates during the payroll period studied and that the most of them were engaged in maintenance of way service. It was found that 39,718 received a basic rate of 25 cents an hour or less, and that 85,022 received 30 cents an hour or less. Since the 10 per cent wage cut was in effect during 1933 this meant that full time earnings for these employees who were receiving 35 cents an hour amounted to about $750 in that year. The influence of unemployment and short time reduced the earnings of many of them below this level.

In 1933 the United States Department of Labor made a study of the earnings and standard of living of 1,000 railroad employees. Individual records were secured, and it was therefore unnecessary to depend upon an annual average of monthly counts of employees in arriving at an average earnings figure. Conductors and engineers were not included in the sample and the resulting distribution of earnings showed, therefore, a proportionately larger number of men in the low earnings brackets than would be true of a study including all occupations. According to the report of this study:

"The earnings in 1932 of the 980 men studied were startlingly low. Thirty-eight per cent had made less than $1,000, and two-thirds less than $1,500. One hundred and two earned as little as $500, and only 18 per cent as much as $1,750."

It was further reported that since a majority of the workers studied made less than $100 a month they had a strong incentive to supplement their income by outside work, but only 60 out of 980 succeeded in doing so.

The average earnings of all employees included in the Department of Labor study amounted to $1,220 in 1932 when weighted according to the methods used in this report. This is $40 lower than the group average obtained in the present study for employees in the same occupations covered by the Department of Labor survey, and confirms the accuracy of the estimated average obtained for all employees in 1933, after making an adjustment for the upward bias in the original data.

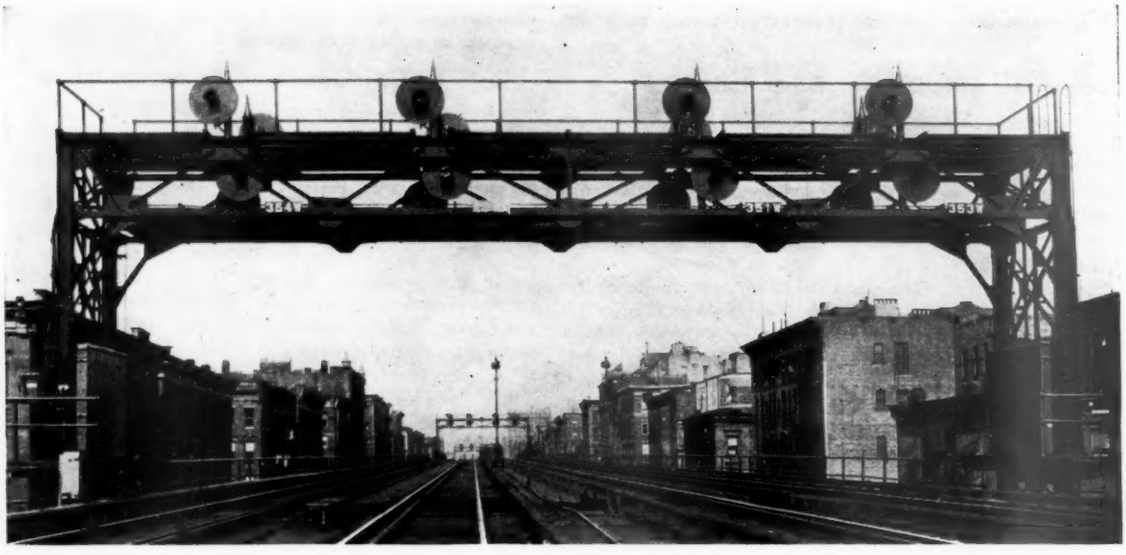
Conclusion and Recommendations

It is significant that all the studies of railroad earnings noted above confirm the conclusion from the data presented in this report that there are many thousands of laborers and short service employees in the skilled occupations who receive comparatively low annual earnings. There are also thousands of more experienced employees who have suffered partial or total loss of earnings during the last few years in spite of their relatively high seniority standing. These facts give added emphasis to the program of protection for railroad workers discussed in the Co-ordinator's report of January, 1935. The details of this program will be developed at greater length in a series of studies by the Section of Labor Relations of the Co-ordinator's office. Three lines of suggested action can be summarized here.

For those railroad employees who are at the bottom of the earnings scale there is no remedy for low living standards, except higher rates of pay and less curtailment of time to one, two or three days per week. The railroad industry has been exempted from the operation of the codes of the National Recovery Act, but there are many railroad workers, particularly in the maintenance service, whose basic rates of pay have not been brought up to the minimum standards for comparable employees in other industries. For these workers minimum wage rates should be adopted. It is true that the railroad industry is faced with extremely difficult financial problems. At the same time it should not pay wages which are less than the minimum standards required of other industries. For it to continue to do so will certainly not be in the public interest, and will in the end adversely affect the railroads concerned themselves. Underpaid and exploited workers are no asset to the industry which employs them, nor to the communities in which they live. They are producers, poor consumers, and poor contributors to the well being of such communities.

For employees in the higher earnings brackets increased wage rates will not provide a universal remedy for low annual incomes. Both employees and management must reconcile the sometimes conflicting claims of rates and earnings. Management is, of course, primarily interested in rates of pay because of their direct relationship to costs. The welfare of employees, on the other hand, is more directly related to earnings than to rates, and no rate, however high, is significant unless it is accompanied by the possibility of a reasonable amount of work opportunity throughout the year. There is a positive duty resting on management to regularize employment in every way in which such regularization may be successfully carried out. With a program designed to achieve this objective, the employees concerned should not only be sympathetic, but helpful. Such cooperative effort will be more effective if both employees and management, through appropriate representatives, will confer from time to time to consider and agree upon ways and means for accomplishing this purpose.

But in spite of the best efforts of men and management, unemployment will not be eliminated among those employees who remain attached to the industry and the risk will be increased for those who are released as a result of regularization. The only way this risk can be minimized is through an adequate system of unemployment insurance. This study has shown the important effect of part-time earnings. More particularly, it has revealed that most of the burden of unemployment falls upon that fraction of the employees who are young in years, young in the service, and whose pay rates are low. As a consequence, these employees are disproportionately subject to the hardships of reduced earnings that accompany unemployment. The only adequate methods of safeguarding them is through unemployment insurance. The fairness of such a provision is further apparent when it is remembered that the curtailment of their earnings arises in part from the operation of the seniority system as well as the practice of deferring maintenance during times of reduced railroad revenues. These two practices combine to depress the earnings of junior train and engine service employees as well as maintenance employees disproportionately to the reductions in the revenues of the railroads. Since this is true, it is eminently fair and reasonable that a system of unemployment insurance supplementing the earnings of these employees at times when they are deprived of such earnings due to unemployment should be established to provide a measure of protection for them.



Automatic Signal Location at 112th Street on Four-Track Territory

Multiple-Block Signaling*

A discussion of either-direction automatics and an increase in the number of aspects as means of facilitating train movements and improving safety

By R. B. Elsworth

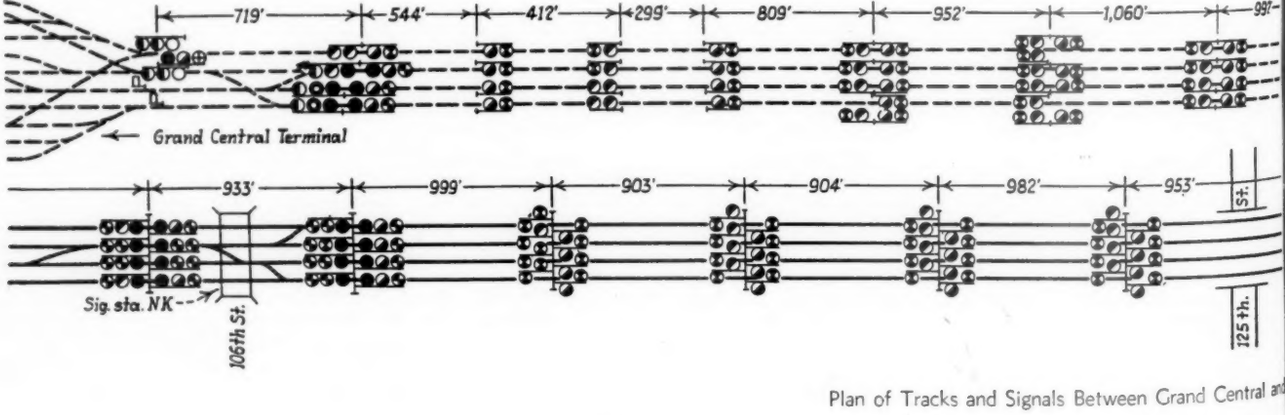
Assistant Signal Engineer, New York Central, Albany, N. Y.

THE Electric Division of the New York Central in New York City affords an excellent example of the benefits which can be effected in increasing track capacity and improving safety by providing multiple aspects for signals and by either-direction signaling on multiple-track territory.

All passenger, suburban, mail and express trains of the New York Central and the New Haven move into and out of the Grand Central Terminal over a four-track line for five miles from Mott Haven. Since the coach yards are located north of Mott Haven, numerous empty train movements are also made between this yard and the terminal. On certain peak traffic days, as many as 850 train movements are made in this territory, while the total for the month of August, 1929, was 21,800. Operations are complicated further by the fact that trains are bunched during the morning and evening rush hours, as, for example, between 7 and 8 a.m. when 62 trains are scheduled through Mott Haven Junction.

During 1928 and 1929 the situation was so serious that the stopping of a single train in this congested territory frequently caused such delays that traffic did not again become normal for an hour or more. Train movements over Mott Haven Junction were so numerous that there was little opportunity to run empty equipment across the plant into the coach yards, and, as a result, empty trains were held out on the main line Track No. 1. In some instances, these trains occupied as much as two miles of track during the greater part

* Abstracted from an address presented before the New York Railroad Club.



Plan of Tracks and Signals Between Grand Central and

of a forenoon, thus obstructing 25 per cent of the main trackage, as well as incurring a large expense on account of the equipment and train crews standing idle.

Various means of providing additional tracks in this territory were investigated but none were practicable on account of the immense expenditures required. One proposition involved the construction of a new two-track tunnel beneath the existing Park Avenue tunnel to 96th street, and then continuing a new tunnel under the street and beneath the Harlem river, coming to the surface in the vicinity of High Bridge. Another suggestion contemplated the construction of a new line from the New Haven yards in the Bronx, beneath the Harlem river and continuing south between Second and Third avenues to a new station on 42nd street, east of Third avenue.

Track Capacity Increased by Signaling

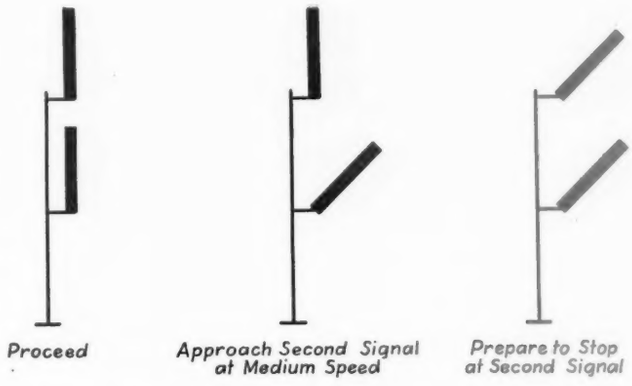
Another study indicated that the necessary relief from congestion could be effected by the installation of proper signaling between Mott Haven and Grand Central terminal, and the reconstruction of the track layout and interlocking at Mott Haven Junction. The magnitude of the relief needed justified a relatively large expenditure for these improvements. At Mott Haven, changes were made in the track layout so that the prevailing routes of traffic did not cross during rush hours. Short crossovers and frogs that limited safe speeds to 10 m.p.h. were replaced with easy-angle switches and frogs to permit speeds of 30 m.p.h. Four interlockings in the vicinity of Mott Haven were combined into one large new plant, thus co-ordinating operations over a large territory in such a way as to facilitate train movements. An entirely new system of automatic block signaling was installed between Mott Haven and Grand Central, using four-aspect, three-block signaling to direct train movements in either direction on all four tracks.

With this arrangement, as many tracks as are required can be used for trains in one direction to meet the preponderance of movements during peak periods of the day. The blocks are comparatively short, averaging from 750 ft. to 1,200 ft., so that following trains can be spaced closely and the safety of such operation, even at comparatively high speed, is provided by the multiple aspects of the signals which give an engineman information as to how he should control the speed of his train for several blocks in advance.

The results effected by these track, signal, and interlocking improvements have exceeded those reasonably anticipated. The system has so increased the track capacity that all congestion has been eliminated and trains are operated without delays. Furthermore, the operation is so flexible that a train running a few minutes behind time can be handled promptly without disrupting the schedules of other trains, while the movement of empty equipment into and out of the coach yards at Mott Haven has been so expedited as to eliminate lost time for crews and equipment.

Improved Signal Performance

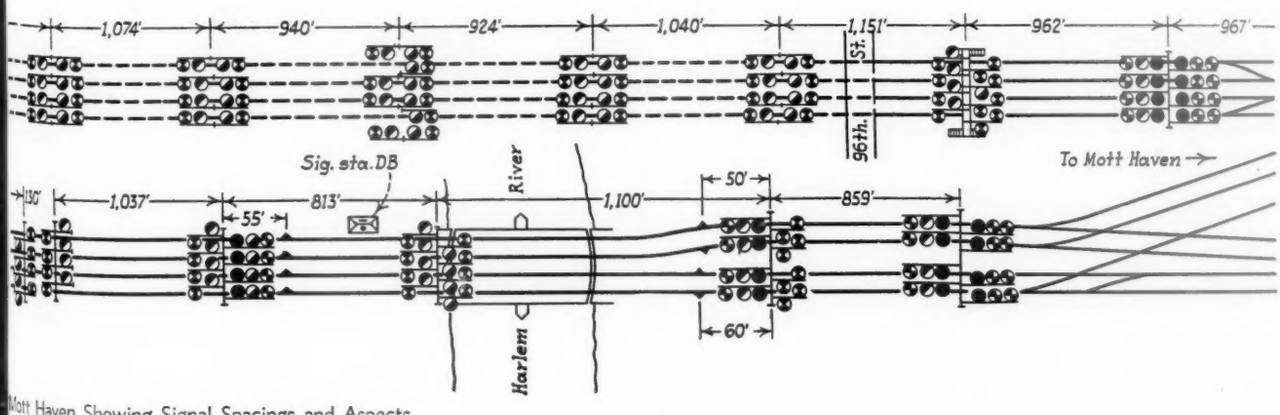
In a territory handling such heavy traffic, a failure of signal or interlocking equipment frequently causes delays to several trains. For this reason it is important to call attention to the improvement in the performance of the signaling on this territory, which has been an important factor in the improved train operation. Considering the Electric division as a whole, an average of 27.4 instances occurred each month in 1930, in which a signal failed to operate properly, or one case in 77,000 signal operations. In 1934, this was reduced to an average of 3.5 cases each month, or one failure in 570,000 signal operations, an improvement of 700 per cent. Likewise, in 1930 there was an average of 27 power interlocking failures each month, while in 1934 this was reduced to 7.4, an improvement of 400 per cent. These improvements in signaling performance were due in part to the modern signaling apparatus included in the new installation, and also in part to a reorganization of the signal department maintenance. Another consideration is the fact that the number of trains has been reduced slightly, suburban trains now numbering about 90 per cent of the total for 1930, although little of this reduction has occurred during the rush hours.



Aspects and Indications Supplementing Those in the Standard Code

Important Factors of Multiple-Block Signaling

The novel feature of the improvements on the Mott Haven-Grand Central territory was the use of multiple-aspect automatic signaling, which permitted the use of short blocks to reduce the spacing between following trains and yet gives specific instructions in the form of signal indications to an engineman as to the action to



Mott Haven Showing Signal Spacings and Aspects

be taken at each of several successive signals approaching a point where speed must be reduced or the train stopped. By this arrangement, trains can be kept moving at the highest possible rate of speed consistent with safety, depending on conditions ahead, thereby eliminating unnecessary delays or stops.

This system is properly designated as multiple-block signaling rather than as four-block signaling. It can be used to include or omit aspects for two, three, four or more blocks, as may be required by local conditions affecting train speeds at certain points on the line, and by the number of trains operated during certain periods of the day.

The aspects and indications of the American Association of Railroads are based on all of the aspects being used as required. The two additional aspects used on the installation between Mott Haven and Grand Central are consistent with those of the Standard Code, and may likewise be included or omitted as required. Furthermore, it is practicable to change from block to block, changing from a two, three, four or five-block system and back again at the next location, without inconsistency. The indications required for special locations and conditions may be selected and used without their effectiveness being impaired by the use or non-use of other indications.

In preparing the detail plans for the proposed rearrangement there was a lack of definite information as to the distance required for retarding and stopping trains at various speeds. Differences in train weights and braking equipment were also factors to be considered. In 1929, the N. Y. C. made several hundred braking tests under different combinations of variables. The stopping and retarding curves plotted from these tests are so uniform and consistent that it is possible to interpolate other curves to cover almost any make up of a train. To the established train-braking distances, certain arbitrary factors of reliable operation are added to establish approach signal-distance curves, which are used for reference when locating signals, and when deciding upon the aspect to be used.

The New York Central tests were preceded by a series of tests in 1913 on the West Jersey & Sea Shore. Engineers of the Boston & Maine, using the Blackall-Park air brake catechism, have calculated approach signal-distance curves which correspond surprisingly closely with those established by the New York Central.

General Use of Information

Train crews frequently run over two or more divisions and occasionally over two or more railroads, for which reason it is desirable that signal aspects and indications be as consistent as practicable. The studies described and conclusions reached are applicable for practically all traffic-operating conditions on steam railroads, and are also being applied on the district beyond the Electric division. Adjustments in signal distances, in accord with established formula, are necessary for descending or ascending grades.

Excessive length of blocks does not effect a relative saving in construction and maintenance costs and may cause excessive train delays if the rules are observed when a signal is unnecessarily in the stop position, or, if the rules are disregarded to avoid excessive penalty, may defeat the purpose of the signal system. In a recent instance where an approach indication was passed 8,000 ft. before reaching the "Stop" signal and the "Advance slow speed" block was 6,400 ft. long, a high-class long-distance passenger train was delayed 20 min. on account of one signal being at "Stop."

Automatic signal-distances of approximately 8,000 ft. on level track should provide ample approach distances for almost any speed and weight of train. Short blocks with multiple aspects are valuable in increasing track capacity where trains are operated under close headway during certain periods of the day, and are of marked benefit in keeping trains in motion and avoiding unnecessary delays when approaching a point of congestion. They greatly reduce the time lost and increase the safety of operation when signals may be out of order. Reducing the block lengths one-half increases the track capacity 20 per cent.

Signal blocks of unequal length are a handicap in high-speed territory. Long blocks in or leaving low-speed territory may not produce the best results. The time required for a train to pass through a block should be used as a yard stick rather than lineal feet of distance, for the objective is to get trains through safely with minimum interference with other trains and without raising the maximum speed limits which have been established for definite reasons.

Higher average speeds, without higher maximums, are desirable. When a train is brought to a stop on a main track, the flagman should get off to flag, and the train may not again be started until the flagman is recalled by the locomotive whistle. If the train-line air brake is applied on a long freight train and an attempt is then made to release the brakes and proceed, there is a possibility of the brakes sticking on some of the rear cars, thereby causing the train to pull apart. Therefore, when the air brakes are applied on a long freight train, it is generally brought to a stop and the flagman sent back while the train line is being pumped up to the required pressure, all of which involves delay.

The giving of information to an engineman as to what may be expected of him several blocks in advance, will often permit him to control his train in such a manner as to avoid an actual stop, thus saving time and avoiding possible damage to equipment.

Over-conservative railroad officers often hesitate to take advantage of new signal indications, feeling that the enginemen will not understand them. Experience and reason indicate that enginemen welcome facilities which make their work better and easier. New signal indications, if consistent with those previously given, are welcomed by enginemen, and full advantage is taken of the information conveyed.

* * *

A Chicago, St. Paul, Minneapolis & Omaha Freight Train in Sioux City, Ia., Yards

Superintendents Discuss Operating Problems

Committees report on highway competition and expediting the movement of cars through terminals

Part III

THE general report of the convention of the American Association of Railroad Superintendents, which was held in Chicago on June 18-20, was published in the *Railway Age* of June 29, pages 1003-5. Abstracts of three of the committee reports appeared in the *Railway Age* of July 13. Abstracts of three additional reports presented at this convention follow.

L.c.l. Service

The report of the Committee on Meeting Today's Demands in l.c.l. Service was read by R. C. Randall, superintendent of the Erie, in the absence of Chairman W. L. Fox, superintendent of the Belt Railway of Chicago. This report is abstracted below:

The rail carriers can, by meeting today's demands in l.c.l. service, do more for themselves in retaining their revenue than they can expect to have done for them through the enactment of legislation. This has been carried on successfully by some railroads for a number of years by the use of motor trucks supplementary to terminal service. Where permitted by state regulations, they have utilized motor trucks to expedite l.c.l. traffic where the physical layout of the railroad made it impracticable to meet the demand with rail freight service. Fast overnight service to principal cities has been provided by transporting l.c.l. freight in passenger trains.

The transit time involved in the interchange of l.c.l. freight between railroads has been reduced materially; to some extent, free storedoor service has been made available on l.c.l. lots of 6,000 lb. or more. General free pick-up and delivery is now in the making and will no doubt be instituted in the near future. Some roads have been employing motor trucks for some time to distribute l.c.l. freight within a radius of 30 to 50 miles by the substitution of trucking service, with gratifying results. These moves have served to retain traffic which would presumably have been lost and to regain considerable traffic which had been diverted to the highway. While this service has many pitfalls from the standpoint of the railways, its universal application is inevitable.

The determination of the rail carriers to meet today's demands will be the most important factor in fixing the future status of overland transportation. Reliable truck operators must be conceded certain traffic that formerly belonged to the rails, but a tremendous volume of freight is being transported by motor truck that need not be so conceded. Transportation in the future is to be concerned more with railroads plus motor trucks than with railroads versus motor trucks.

Progress in automotive engineering will produce motor truck equipment that is superior to and more economical than that in service today. Highways will be more adequate for increased traffic. The degree to which highway transportation expands will be determined by what the railroads of this country do to meet the demands this transportation has created. This traffic can be kept where it legitimately belongs by intelligent coordination and open-minded determination to keep in the railroads' account that traffic which by all standards of judgment and common sense belongs to the rails, and to concede willingly and co-operatively to the trucks that traffic which belongs to them.

Train schedules between larger centers should permit of the day's loadings being assembled and the trains forwarded at the earliest possible moment, to provide for arrival at destination sufficiently early to allow cars to be placed for early morning delivery. At points where merchandise cars arrive at various times during the evening, as many cars as are available should be moved to the freighthouse by midnight and unloaded to avoid congestion in the morning. This will also make it possible to work freighthouse staffs in relays and provide for a smaller staff at the peak load hour in the morning.

Pick-up and Delivery

The partial adoption of pick-up and delivery service is not satisfactory. Pick-up and delivery service should be given on all l.c.l. freight and inclusive charges be quoted, adjusting tariffs accordingly. Pick-up and delivery rates on specified traffic destroy the advantage to shippers of shipping goods for a number of consignees at the same time, as shippers must deal with several cartage agencies if the railway provides free pick-up and delivery for only part of the traffic.

The preferable arrangement in larger centers is for the railway to own and operate its own delivery service under the local agent. This eliminates accounting between the railway and the cartage contractor. At smaller towns a contractor or the Railway Express Agency may be used to advantage, if the town cannot be served from a larger adjacent center by road, or if several towns cannot be served by one railway-owned truck.

Local freight trains can be used to advantage where carload traffic makes them necessary and the handling of l.c.l. traffic does not interfere too greatly with carload service. Way freight trains should be so arranged as to leave their initial points at the earliest possible moment and if possible, night way freight trains should be so used that goods will be at destination in the early morning.

Junction transfer can, in many instances, be operated in several shifts without additional cost. These should, preferably, be operated at such hours as will not make it necessary to hold traffic over. Traffic arriving in the evening on local trains from different branch lines can be consolidated to make straight carloads for larger cities or transfer points and be handled by through freight trains which deliver the freight at destination the following morning instead of being held over for handling by freighthouse staff next day. The same arrangement can be applied in the reverse direction and freight from large centers can be transferred to cars for local branch trains before they leave by a force starting as early as midnight. This not only provides more prompt handling, but also eliminates the handling of unnecessary cars in trains and in terminals.

If the railways are to approximate the costs of highway competition, it is necessary that they eliminate the waybills and the accounts. There are various ways by which these costs can be reduced, as for example, by the use of stamps or stickers. A low rate could be quoted where the shipper would show on shipments a list of contents, name of shipper and consignee, certified weight, rate and charges, with self-cancelling stamps to cover the charges. The shipper would purchase these stamps from the railway. Stamps by color, shape, letter prefixes and serial numbers can be designed to protect revenue, give in-

formation as to identification of the shipper, etc.; the shipper could be required to keep a portion of the stamp for identification of parcels, with a portion for the shipping station and another for destination stations, these portions to be turned in by wagon service employees to agents where door delivery is provided, with record of delivery.

The use of stickers or stamps which will eliminate all billing and accounting is necessary; if stamps are not used, the only way to simplify billing and accounting is to eliminate the classification, using a single rate for all goods. Multiple rates make details on all bills of lading, prepay accounts, waybills advice notes and station records necessary, as the railways, shippers and consignees must have the details to ascertain the rate and check accounts. This detail, with all of the checking, auditing and claims, is what builds up present high cost.

Another advantage that the highway carrier has offered the shipper has been a minimum of crating and packing requirements. In an effort to reduce claims, the railways have devised regulations which are so exacting as to add greatly to the cost of shipment by rail as compared with truck handling. This condition is driving much business to the trucks. It may be possible for the railways to initiate some measure that will reduce the necessity for such heavy crating, as, for instance, more careful stowing in cars, the reduction of rough handling in switching, etc.

Recommendations

1. Approach the situation with an open mind and a determination to meet the issue squarely from the standpoint of modern conditions, realizing that the public demands service without a lot of red tape and a multitude of restrictions.
2. Speed. We are in a day when merchants are carrying low inventories and relying on the various transportation agencies to replenish their requirements on short notice.
3. Storedoor delivery and pick-up with minimum of restrictions.
4. Simplify tariffs as to classification, packing requirements and charges. The present ramifications and confusions must be changed radically.
5. Co-ordinate rail and highway transportation where it is possible to do so as an adjunct to rail car-lot service.
6. Continue the comprehensive study of the rate structure that is being made to determine the feasibility of downward revision.

Faster Terminal Handling

The report of the Committee on Ways and Means to Expedite the Movement of Cars Through Terminals was presented by Chairman F. F. Laird, supervisor of yard and terminal operations of the Chesapeake & Ohio. It is abstracted below:

Each yard and terminal must be analyzed individually to develop concrete ways and means for attaining accelerated car and train movement. The problem resolves itself into two principal factors of study to determine (1) the advisability and practicability of physical changes in yard and terminal facilities, (2) changes in operating methods and practices in conformity with such facility revision.

Car detention may be minimized by (a) rule changes covering shippers-order-notify freight, (b) closer co-operation with and a better understanding of the service needed by shippers and receivers of carload freight, (c) a better knowledge of equipment requirements by car distributors, (d) convenient assembly points for equipment awaiting disposition, (e) general instructions by proper authority, giving disposition on various classes of system equipment, private and connecting line cars of all classes and commodities and outlining special instructions for special movements of all empty cars, (f) some simple carding system to designate the proper home route of foreign empties. Certainly the usual foreign cars can be so handled, saving thousands of car days and switching hours due to the time necessary to secure this information.

A large percentage of employees begin their railroad careers in yards and terminals. Therefore, it is of the utmost importance that the officers in charge be competent to pass upon their general fitness and, probably even more important, that those to whom they become immediately subordinate are fully qualified to educate and train them for increased responsibilities. Seventy per cent of all men are "rut followers," lacking in initiative and resourcefulness. Twenty per cent can be trained to only a certain degree of efficiency. They make good chief clerks, foremen, etc. Only 10 per cent can qualify for every essential responsibility.

There should be a sufficient number of tracks of proper length in the receiving yard to take care of the average peak movement. Every possible effort should be made to eliminate dead time resulting from doubling over, relieving road crews, delaying inspection, delaying switching, delaying road power and duplication of classification.

Classification

The time element of classification is controlled largely by the method employed, the number of classifications, the adequacy of facilities, interference, handling of cabooses and inspection. Hump operation is most rapid. The ideal hump is one equipped with modern car retarders. However, the number of loaded cars, the number of classifications, track facilities, weather conditions and the time element are the principal factors in determining the most efficient method to employ. Hump operations have advantages in that they have separate receiving yards and often separate forwarding yards, whereas the average flat yard is usually a combination yard, subject to interference not generally experienced in hump yards.

Regardless of the method employed, consideration should be given to the actual necessity for making any classification. There is nothing to be gained by making a classification in one terminal which results in a subsequent duplicate effort. The classification of empties with loads frequently results in further switching at some later terminal to replace empties with loads. The classification or bunching of livestock and perishables is important to minimize handling in the necessary feeding, resting and service points enroute. The points where business originates and where it leaves the carrier's rails are dominant factors in any classification set-up. Symbols for each classification should be standard for the system. Their use in switching is much more advantageous than station numbers.

A study of the necessity for every inter-yard operation is recommended, with the thought that there are many places where the saving in inspection time, crew, service and engines employed will justify increased facilities in one yard to eliminate other yards, used generally for house, team, industry and interchange classification. In larger terminals it will be found advantageous to schedule industrial service and house switching. The house set-up should be standard, based upon a minimum switching effort, but definite consideration should be given the effect upon the ton cost if the trucking distance is materially increased.

An intimate knowledge of connecting carriers' train service and schedules and co-operation in effecting sufficiently frequent interchanges to insure a minimum of delay in the movement of all connecting line cars is essential. The segregating of loads from empties by the delivering line is entirely feasible at many interchange points and tends to speed up loaded car movement and minimize switching effort. Likewise, the interchange of car, waybill, seal and other records frequently is advantageous.

The feasibility of handling transfer cuts, or trains, with the initial crew and motive power (including the caboose when necessary) over subsequent terminals and belt lines to final destination, is an important possibility of joint inter-terminal and belt line operation which, through the elimination of duplicate handling and inspection, affords opportunity for immense savings, and provides justification for such organization and operating agreements as may be necessary to balance the crew and engine service.

Inspection

The most important factor of safety, while a recognized necessity in minimizing the hazard of yard, terminal and road operations, is productive of more delay to cars and trains and results in more non-productive man-hours than any other feature of transportation, and every change in method or practice increases rather than diminishes the delay. Since it is obligatory upon the part of every railroad to comply with the air

brake rules, all forwarding tracks should be equipped with air to minimize the time required for charging train lines. This will be even more important when the use of "AB" brake equipment becomes general, because it requires twice the time to charge train lines with this style of brake valve.

Some of the factors deserving consideration and careful analysis are as follows:

Inspection in receiving yard. The yardmaster or other proper authority should have the prerogative to instruct the inspector as to the number of cars required for the next switching move.

Repairs in receiving yard, practicability and general effect on switching and classification.

Provision for handling supplies so utilized.

Yard air. Study should be made to determine the number of tracks to equip.

There should be a sufficient number of inspectors to permit maximum efficiency in train movement. Convenient phone communication has proved an invaluable asset in air and other inspection service, particularly when inclement weather affects the signaling.

When yards are not equipped with air, it may be possible to save much delay through the use of a yard or other locomotive to assist in pumping up the train line.

A study of air and other inspection rules and their general effect on transportation may indicate the possibility for less stringency at intermediate terminals.

Repair tracks should be serviced with sufficient frequency to minimize delay. Surveys indicate many present set-ups can be materially improved.

Definite instructions indicating and clarifying "A" and "B" inspection should be in the hands of all concerned. Likewise, instructions should name the points where "A" inspection must be made and the extent to which "A" and "B" inspection will apply at succeeding terminals. Terminal schedules should be set up to cover the departure of all trains, giving careful consideration to the respective importance of each train, convenience of classification and terminal and road train interference, and they should be revised from time to time as circumstance may necessitate. Every yard and terminal should have the necessary means for dependable communication. The phone is invaluable in directing crew operations. The teletype is adaptable for many uses in yard and terminal operation.

General

Initial and final terminal time merit more attention than is devoted to them. There is no reason for failure to maintain a high average in starting scheduled trains on time and other trains on call. The calling and relieving of crews, movement of power to the engine terminal, fuel and water facilities and hostler service are all factors of importance.

The installation of flood lights has been fully justified in many terminals and industrial yards. The question of switch lights is always controversial but their use in many yards will facilitate switching. The numbering of all switches may speed up switching to a marked extent. Illuminating colors for night use may prove very helpful.

In every rule-instruction class, correct signaling should be demonstrated with the hand and lamp. Observations indicate that some men can give a correct hand signal but are seemingly unable to convey the same clarity with the lantern. Properly executed signals are a time-saving factor of importance, an insurance against hazard and conductive to a minimum of rough handling. Semaphore and light signals properly located save time in hump operation and other switching movements. Likewise, audible signals are an important adjunct. Efficiency tests should be made to insure the proper use of all signals and signaling devices.

The necessity for caboose assignment is debatable. With a dependable system for checking and supplying cabooses, pooling is as practicable as the pooling of motive power in 98 per cent of through train operation. In handling assigned cabooses, a definite system should be in effect to minimize the handling (a) from inbound train, (b) to storehouse for supplies and (c) to outbound caboose track.

Generally, each terminal is given a quota of cars to light-weigh for each month and brake valves are cleaned and journals packed in accordance with standard time limits, when cars are given other repairs. It is practical to set up a standard for cleaning brake valves, packing journals and light-weighing cars at the same time. If this can be done, it will save one shopping of every car each year and the necessity for switching out cars for light-weighing after they have been placed in trains.

Conclusion

The importance of yard and terminal operation justifies the establishment of a permanent committee composed of trained and experienced transportation men of wide experience and competent engineering, mechanical and car department units to work as a national organization. Such a committee could standardize methods of operation, outline sane practices, formulate practical rules for each unit of the operation, devise and standardize cost and other reports valuable as measuring sticks of efficiency, be a material aid in the development of new yards and terminals, and in revision of work of this character. Committees functioning for associations and composed of a personnel employed by individual railroads do not have the time or the support necessary to do justice to such an important unit of railroad transportation.

Discussion

Frank Cizek (D. L. & W.) inquired as to the working of switch engines 24 hr. a day and, in response to this and other questions from J. W. Graves and R. C. Randall, Mr. Laird explained the system whereby the C. & O. operates its yard engines three shifts daily, 30 days per month and, with modern power and excellent coal, obtains the maximum in locomotive utilization.

Extended Territories

The report on Ways and Means Employed by Superintendents in Maintaining Supervision as Their Territories Have Been Extended was read by P. M. Donnellan, superintendent of the Erie, in the absence of Chairman T. K. Faherty, superintendent of the Baltimore & Ohio. It is abstracted below:

The assignment of additional territory should have no horrors if staff officers are practical, capable men and have the assured confidence of the superintendent, nor will the superintendent be disturbed by happenings many miles away if a practical and trustworthy staff officer and other employees with full knowledge of details and under the same directing force, are available or present to cope with any situation. However, if business conditions return to normal, safe and economical operation cannot be continued over greatly extended territories for the reason that it will involve the employment of numbers of new men, who will require closer supervision than the present personnel. The present turnover of railroad employment is about zero. Therefore, the men in train service, shop, maintenance of way and clerical forces are all experienced employees who are capable of handling their work more efficiently and require less supervision than during periods when there is a turnover of even a small percentage of employees.

A superintendent should not select or retain on his staff an officer who is unable, either from lack of knowledge, impracticability or indifference, to carry the burden of the department to which he is assigned. Staff officers should be thoroughly familiar with working agreements, and with contracts with the public, and should have full knowledge of materials and operation of their department. Superintendents must keep in constant touch with the working forces on both old and newly acquired territory. Each staff officer must keep in close communication with the working forces. The staff of a newly acquired territory will find it desirable and in most cases profitable to study the rules of former division officers to decide whether a change of policy will be necessary.

A study of physical and operating characteristics of newly acquired territory is of first importance and should include the general profile of the road, the ruling grades whch control the tonnage movement, the location of cities, wayside stops, sidings or spurs, team tracks or any tracks which shippers have the right to use either by contract or convenience and of all diverging or detouring routes, land holdings, water supplies, coal tipples, tracks upon which coal supplies are maintained and tracks,

yards and warehouses where divisional supplies are maintained for current or emergency service; also all rivers, harbors, bridges, fills and cuts of any consequence. Supervision must keep in full touch with shipping requirements of all patrons as well as the custody of the property and general activity of the territory. Such supervision must be given to the old as well as the new territory.

The superintendent should know the requirements, such as car supply, service, etc., of both shippers and receivers in newly acquired territory and be acquainted with the executives of the patrons. Transportation requirements of the public are ever-changing and rearrangements of schedules are often necessary to conform with present-day needs. The superintendent and his staff should cultivate the friendship of public officers and obtain their sympathy with the various problems confronting the railroad.

Staff officers should be located at points advantageous to all the available traveling facilities in order that they may keep in constant touch with their territory. Their contact with crews, shopmen, office forces and maintenance of way men should be frequent enough to show interest in their activities. The success of staff officers with their many and varied responsibilities will depend upon their ability to get men to follow directions.

Direct supervision in all activities on large divisions is not always possible and it is, therefore, necessary to have well-located telegraph offices and telephone communication where orders of general, routine and special nature can be received and executed. In the reduction in business which has required the merging of territories into large operating units, safety, economy and service are of first importance. Economy can be effected only by sound, efficient, operating policies. One writer has said that the assignment of too much territory is false economy. To this we agree but know of no present consolidations which have been made with reduced business which have resulted in loading officers to the breaking point.

In assuming charge of large districts, the superintendent will invariably find a corps of supervising officers of seasoned ability and there should be no hesitancy in delegating power and authority to subordinates. The delegation of power will assist the superintendent, strengthen staff officers and work a common good on the larger territory.

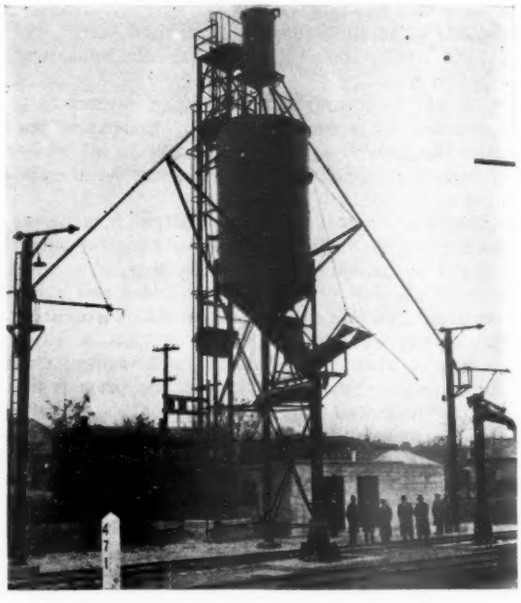
Analyzing problems well applies to all. Supervision should be reasonably familiar with the technical terms of professional men and the common terms of tradesmen, for he can, in this manner, eliminate many delays. While increased territory brings more problems for decision, it should in no way break down the structure, depreciate the value of the property or impair the morale of the men. It is fundamental in principle, emergency in character and economic in result.

* * *

Two "Olympians" on the Chicago, Milwaukee, St. Paul & Pacific

New Coaling Plant on Seaboard Air Line

IN the construction of a single-track locomotive coaling and servicing station which the Seaboard Air Line completed at Elberton, Ga., an especially convenient arrangement of the facilities was adopted to permit locomotives facing in either direction to be supplied with coal, sand and water and to dump cinders at one spotting.



The Locomotive Service Plant at Elberton, Ga.

Station Is Automatic Electric Skip-Hoist Type

The coaling station is of the automatic electric skip-hoist type which elevates coal at the rate of 30 tons per hour to an over-head cylindrical steel storage bin of 50 tons capacity. From the storage bin the coal is delivered to locomotives on the main track through a slide-cut, non-skim coaling gate. Mounted above the coal storage bin is a five-ton dry sand tank from which sand is delivered through 3-in. pipes to two sand spouts located 37 ft. each side of the center line of the coaling apron. Intermediate supports for the 3-in. sand pipes are provided by structural steel brackets which are fastened to the steel columns in the supporting tower of the storage bin. Opposite the coal storage bin are two water columns in proper position for watering locomotives facing in either direction. Engine cinders are dumped into one of two shallow concrete cinder pits in the track, from which they are removed by manual labor.

The coaling apron, sand spouts and water columns are designed to permit the servicing of locomotives of various sizes and to avoid the necessity of exercising a high degree of accuracy in spotting locomotives. Another feature of the plant is a reinforced concrete wet sand storage bin and sand-drying house which is equipped with a Pyropad coal-burning stove sand dryer.

The coal and sand facilities at Elberton were designed and built by the Ross & White Company, Chicago, under the direction of W. D. Faucette, chief engineer, and W. L. Darden, senior assistant engineer, of the Seaboard Air Line.

Extent of Low Wages and Long Hours

WASHINGTON, D. C.

CO-ORDINATOR EASTMAN on August 1 made public a report on the "Extent of Low Wages and Long Hours in the Railroad Industry," prepared by his Section of Labor Relations, under the direction of Otto S. Beyer, director of the section.

"From information and complaints which reached this office," Mr. Eastman said, "it appeared that there was a substantial number of railroad employees who were working as long as 12 hours per day and even seven days per week. At the same time many complaints were received about the wage rates being paid certain classes of employees on certain railroads, which rates appeared to be lower than those in effect on most railroads for these classes of employees, and lower than established minimum rates in effect in various large scale industries. In these circumstances, and in order to develop a true picture of the situation, a study of the extent to which long hours and low wages prevail in the railroad industry was undertaken.

"Part One of the report is concerned with the rates and hours of railroad employees who, during the payroll period nearest November 1, 1933, received a basic rate of 35 cents an hour or less. Part Two deals with the hours worked during the payroll period nearest May 1, 1934, of all railroad employees other than executives, who worked more than 48 hours in a week or 8 hours per day, irrespective of the rates of pay which they received. The railroads of the country cooperated generously in providing the basic data for this investigation."

Beyer Memorandum and Summary of Report

Following is a memorandum addressed to Mr. Eastman by Mr. Beyer regarding the report and the summary and conclusions:

The desirability of establishing minimum wages and maximum hours of work for the employees of industry has been given steadily increasing recognition in recent years. By various devices, such as codes of fair competition, state legislation, and labor agreements, wage rates below which employees should not be required to work and hours beyond which they should not be kept on duty have become established labor standards.

Cognizant of this tendency, you addressed a memorandum dated September 2, 1933, to the railroad presidents and railroad labor executives urging that they jointly give consideration to the establishment of minimum wages for those railroad employees still being paid wage rates less than those established by codes of fair competition approved by the President for comparable industries; and, second, that where hourly, daily or monthly rated employees, whether in supervisory capacity or otherwise, are required or permitted to work more than eight hours per day as regular assignments, an effort be made to reduce the working week to 48 hours. The railroads and their employees responded to your suggestion and some improvements were effected. However, it appeared that the facts required for a complete appraisal of the extent to which long hours and low wages prevailed in the railroad industry were not known.

A study was therefore instituted with the co-operation of railroad management to ascertain these facts. Two questionnaires were submitted to the industry, the first dealing with hours and rates of pay of employees receiving a basic rate of 35 cents an hour or less for the payroll period nearest November 1, 1933, and the second dealing with the hours of those employees who worked over 48 hours per week during the payroll period nearest to May 1, 1934, irrespective of their rates of pay.

The accompanying report analyzes in detail the information obtained through these questionnaires. More than 155,000, or 15 per cent of all railroad employees, were reported as receiving basic rates of 35 cents an hour or less or equivalent daily, weekly or monthly rates. Many of these rates were less than the standards set for comparable work in industries which were regulated under N. R. A. codes. More than 110,000 employees or nearly 14 per cent worked more than 48 hours per week during the payroll period studied. This situation suggests that there is still opportunity in the railroad industry for the adjustment of rates and hours in those instances where long hours or low rates are out of line with the standards set for industry in general.

The data on which Part One of this report is based were obtained as a result of a questionnaire inquiry to all Class I railroads[1] regarding the number of employees who received 35 cents an hour or less (or an equivalent daily, weekly or monthly rate) during the payroll period nearest November 1, 1933. The facts disclosed by this survey are summarized in the following:

Wages and Hours of Low Paid Employees

For the payroll period nearest November 1, 1933, there were reported 155,540 railroad employees who received a basic rate of 35 cents an hour or less, or its equivalent. This number constituted 15 per cent of total railroad employment. A 10 per cent deduction from basic rates was in effect during the payroll period studied, but on those railroads where this deduction was restored in full by April 1st, of this year, the basic rates are now the actual rates. Of the total number of low wage employees reported, 84 per cent were paid by the hour or day, and 16 per cent by the week or month.

About 50,000 of the total number of low wage employees reported were on the payrolls of Southern railroads, comprising over 30 per cent of total employment on these roads. About 105,000 were in the employ of Northern railroads, constituting over 12 per cent of total railroad employment in the North. In the South 21,075, or 47 per cent of the hourly or daily paid employees reported for that region, were receiving 25 cents an hour or less, while in the North only 13,586, or 16 per cent of the low wage employees reported in the North, were receiving less than 25 cents an hour. Nearly the same ratios held true for employees in both the North and South paid on a weekly or monthly basis.

Nine occupations accounted for 134,293 of the low wage employees reported, or 87 per cent of the total. They were:

Section men
Crossing and bridge watchmen and flagmen
Extra gang men
General laborers
Classified laborers (in shops, engine houses and power plants)
Waiters, camp cooks and kitchen helpers
Truckers (stations, warehouses and platforms)
Messengers and office boys
General laborers (stores and ice, reclamation and timber treating plants).

Over 86,000, or about 55 per cent of the total number of low paid employees reported, were section men and extra gang men. In some of these occupations, notably crossing and bridge watchmen and flagmen and messengers and office boys, the age of the employee has an important bearing on the significance of the rate paid. Crossing watchmen are often older men, who have received their jobs as a kind of disguised pension. Messengers and office boys, on the other hand, are usually young men, who may be considered as undergoing a period of training that may lead to positions of greater responsibility.

The respondent railroads were also asked to report the hours worked of the low paid employees. The existence of both long hours and work spreading was disclosed. Approximately 45 per cent of the 155,540 employees reported worked 41 to 48 hours per week; 38 per cent worked 40 hours, or less; and 17 per cent worked over 48 hours per week. Work spreading was found to exist to a much greater extent among employees paid on an hourly or daily basis, while hours in excess of 48 per week were more common among weekly or monthly paid employees. About 9 per cent of the employees in the former group worked over 48 hours per week, while over 63 per cent of the employees in the latter group worked more than 48 hours per week.

Of the 155,540 employees who were reported to be receiving

[1] Including switching and terminal companies.

basic rates equivalent to 35 cents an hour, or $16.80 per week or less, it was estimated that over 114,000 received actual weekly compensation during the payroll period studied of $12.96 or less. It was also estimated that the establishing of minimum rates to net $15 per week in the North and $12 per week in the South for a standard week of 48 hours would cost $597,000 per month in the North and $249,000 in the South. On an annual basis, the combined costs for the country would amount to a little more than $10,000,000 per year, or .6 of one per cent of payroll. These costs are calculated from the basic rates now in effect rather than from the actual rates which were paid during the payroll period studied.

Since payments in kind sometimes supplement the earnings of railroad employees, the railroads were asked to report the number of low wage employees who received free housing. It was found that 15 per cent of the 155,540 reported employees received free housing, and that this practice is most prevalent in the West and South. Nearly all of the employees who received free housing from railroads were section men and extra gang men.

More than three-fourths of the low wage employees reported were found to be receiving rates fixed by agreement. Of those receiving a basic rate of 20 cents per hour or less, or its equivalent, only 50 per cent received rates fixed by agreement.

Long Hours of Employees, Irrespective of Rates Paid

The question of reducing hours has assumed such importance that it was thought desirable to include with this survey a study of the hours worked of all railroad employees who worked more than 48 hours per week or 8 hours per day, irrespective of the rate of pay which they were receiving. An additional questionnaire was submitted to the same railroads covered in Part One of this study, in order to ascertain the above information. Executives and train and engine service employees were not included in this portion of the survey. There is no adequate record of hours worked of the first group of employees, while the second group is paid according to the dual system of mileage rates and daily minima—a system of wage payment which makes it difficult to compare hours worked.

Excluding these groups, it was found that there were 110,250 employees during the payroll period nearest May 1, 1934, who worked over 48 hours per week. This number constituted 14 per cent of total employment in the occupations included in this study. More than 40,000 were reported who worked over 8 hours per day during this same period. Nearly two-thirds of the long hours employees reported must, therefore, have worked on a 7-day schedule. It was found that long hours schedules were more prevalent in the South and West than in the East. About 9 per cent of the employees in the occupations included worked more than 48 hours in the Eastern District, 18 per cent in the Southern District, and nearly 17 per cent in the Western District. In all districts of the country, hours in excess of 56 per week were found to be the exception. Over three-fourths of the long hours employees reported worked from 49 to 56 hours per week.

Long hours are primarily found among three types of employees, supervisory or foremen groups, unskilled labor (other than track labor) and employees in transportation service generally, again excluding train and engine service employees. There were 10 occupations in which 50 per cent of the total number of employees worked more than 48 hours per week. These occupations were:

Lieutenants and sergeants of police,
Patrolmen and watchmen,
Pumping equipment operators,
General, assistant general, and department foremen,
Clerks-telegraphers and clerks-telephoners,
Telegraphers, telephoners and towermen,
Chefs and cooks,
Waiters, camp cooks, kitchen helpers, etc.,
Crossing and bridge flagmen and gatemen,
Yardmasters.

All the employees who were reported as working more than 48 hours per week averaged 58 hours of work per week, while it is estimated that the average hours of all employees who worked 48 hours or less were only 37 hours per week. Many of the employees in the former group were in low wage occupations, so that a reduction of hours downward would materially decrease earnings that are already low. If it were possible in all instances to limit the work week to 6 days of 8 hours per day, it is estimated that, on the basis of hours worked during the payroll period studied, more than 20,000 new railroad jobs could thus be created.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended July 20 totaled 593,366 cars, an increase of 26,878 cars as compared with the total for the week before, but a decrease of 22,674 cars as compared with the corresponding week of last year. This was also a decrease of 63,014 cars as compared with 1933. All commodity classifications except live stock and ore showed increases as compared with the week before. As compared with last year increases were shown in the loading of miscellaneous freight, forest products, ore, and coke, while decreases were shown as to l.c.l. freight, coal, grain, and live stock. The summary, as compiled by the Car Service Division of the Association of American Railroads, follows:

Revenue Freight Car Loading

For Week Ended Saturday, July 20

Districts	1935	1934	1933
Eastern	130,716	132,634	148,228
Allegheny	113,322	117,358	134,791
Pocahontas	38,443	40,783	47,673
Southern	80,539	80,669	90,734
Northwestern	90,077	95,453	92,983
Central Western	91,725	98,954	92,740
Southwestern	48,544	50,189	49,231
Total Western Districts	230,346	244,596	234,954
Total All Roads	593,366	616,040	656,380
Commodities			
Grain and Grain Products	33,379	47,171	49,184
Live Stock	10,165	26,214	15,663
Coal	89,742	97,713	118,250
Coke	4,726	4,502	6,514
Forest Products	28,416	22,071	29,206
Ore	33,274	32,496	28,007
Merchandise L.C.L.	157,345	158,636	172,019
Miscellaneous	236,319	227,237	237,537
July 20	593,366	616,040	656,380
July 13	566,488	604,192	653,661
July 6	472,421	520,741	543,510
June 29	618,036	646,003	641,730
June 22	567,847	623,322	609,627
Cumulative total, 29 weeks	16,808,332	17,177,596	15,197,851

Car Loading in Canada

Car loading in Canada for the week ended July 20 totaled 45,294 cars, as compared with 45,668 cars for the previous week and 44,751 cars for the corresponding week of last year, according to the compilation of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada:		
July 20, 1935	45,294	19,364
July 13, 1935	45,668	17,159
July 6, 1935	39,835	18,614
July 21, 1934	44,751	19,645
Cumulative Totals for Canada:		
July 20, 1935	1,244,782	635,544
July 21, 1934	1,224,901	660,555
July 22, 1933	1,019,981	518,465

NEWS

New Pension Bill Drafted by House Sub-Committee

Revised plan would penalize those railway employees who do not retire

Another revision of the Railway Labor Executives' Association's pension bill, H.R. 8651, offered as a substitute for the railroad retirement act declared unconstitutional by the Supreme Court, has been reported to the House committee on interstate and foreign commerce by a sub-committee headed by Representative Crosser which held hearings on the bill on July 16 and 17. The tax on railroads and their employees designed to produce the funds to pay the pensions under the plan was still before the ways and means committee. The latest draft contains changes not only from the original bill introduced by Representative Crosser but also from the revised draft submitted by E. A. Krauthoff, counsel for the Railway Labor Executives' Association, who said he had given his "professional opinion that he could write a bill that the Supreme Court would uphold," and includes some suggestions made by H. L. Ekern, counsel for the Railroad Employees' National Pension Association.

The bill was offered on the theory of an appropriation of government money and not as a regulation of interstate commerce, but, since one of its principal purposes is to retire the older and in some instances better-paid employees to create opportunities for employment and promotion of the younger men, the original bill contained a provision for the compulsory retirement of employees at age 65 (with an exception for year-to-year extensions by agreement between the company and the employee to age 70). In the sub-committee bill this has been changed to omit the compulsory retirement but to penalize those who continue in service beyond the 65-year limit or its extension by a reduction of the pension annuity by one fifteenth for each year of such continuation. The reduction would not apply to officials nor to employees' representatives. It is similar to the so-called "cut-back" in the retirement act and in the bill applying to employees retiring before the age of 65 and has the effect of allowing a man who works five years beyond the age limit, to the age of 70 or 75, a pension on the same basis as the man who retires at 60.

The sub-committee also eliminated from the bill the provision covering employees of freight-forwarding agencies and private car lines, who were not included in the retirement act, and also the words "no annuity shall be awarded in excess of $120 per month." This was suggested during the hearings by John T. Corbett, national legislative representative of the Brotherhood of Locomotive Engineers, but under the method of computation provided in the bill $120 a month would still be the maximum.

The bill retains the provision which was in the act but not in the bill as introduced limiting to 30 years the period for which an employee may receive credit in the computation of the annuity, but omits, as did the original bill, one of the features of the retirement act which was especially criticized by the Supreme Court, providing for pension annuities for employees who had left the service within a year before the enactment of the law. The bill would now apply to employees in service at the time of enactment or thereafter, to those in "the employment relation" to a carrier, including those on furlough or leave of absence, and representatives of labor organizations. At the request of Mr. Ekern the definition of "service period" was restored to the form in which it was in the law, so as to include the prior service of those not in service at the time of enactment if they should return to service.

The language of the bill was changed from an authorization of an appropriation of $50,000,000 out of the United States Treasury to an authorization of the appropriation of "such money from time to time as may be necessary to carry this act into effect."

The plan of the two bills is still in a form which the railroads at the hearings contended was just as unconstitutional as the law. It would impose on the railroads and their employees an obligation for the future of some $4,000,000,000 on account of service rendered prior to the taking effect of the law, to say nothing of the amounts to be required for annuities covering future service, while another bill purports to raise the amount by a payroll tax of 4 per cent on the railroads and only 2 per cent on the employees, initially, although the actuarial estimates indicates that the cost of the pensions would gradually increase to some 15 per cent or more of the payroll.

Missouri Pacific Reduces Suburban Fare

The Missouri Pacific, on July 29, reduced its suburban train fare to 10 cents each way between downtown St. Louis, Mo., and Webster Groves and Kirkwood 9.5 and 12.9 miles, respectively. Formerly a 10-ride ticket to Kirkwood or Webster Groves cost $1.46 and a 50-ride ticket $7.26. Under the new schedule, a 10-ride ticket costs $1 and a 50-ride ticket $5.

Reorganization Plan Filed by the Missouri Pacific

Proposal calls for simplification of road's financial and corporate structure

The Missouri Pacific on July 31 filed with the Interstate Commerce Commission a summary of a plan for reorganization and simplification of its financial and corporate structure, including a proposal for consolidating the road and thirty subsidiary properties into a new company having only 3 classes of indebtedness and 2 classes of stock as compared with 83 issues of indebtedness and 33 kinds of stock presently outstanding.

Included with the Missouri Pacific in the proposed consolidated company are the New Orleans, Texas & Mexico and the International-Great Northern, both of which joined in the filing of the plan.

Present equipment trust securities remain undisturbed in the plan, but there is substituted for the diversity of mortgages a single comprehensive mortgage of fixed interest obligation, together with convertible income general mortgage bonds and convertible income notes, on both of which interest charges would be contingent on earnings.

The equity securities proposed are 620,630 shares of a convertible first preferred stock of no par value, entitled to noncumulative dividends of $5.50 a share and to $100 a share in liquidation, and 1,053,554 shares of a no par common stock with about $40 of value per share behind it, based on I. C. C. valuations, and a book value of about $150 a share. Capitalization would be substantially less than original costs of the properties and well below valuation figures on which the company is entitled to earn a fair return.

The single fixed interest obligation proposed is a first mortgage bond, bearing 4 per cent interest annually, which is offered in exchange for certain of the existing underlying bonds, in corresponding face amounts. The Reconstruction Finance Corporation is also offered dollar-for-dollar in the new first mortgage bonds for its loans. Iron Mountain 4s of 1933 are offered 75 per cent in the new first 4s, and 25 per cent in 5 per cent convertible income general mortgage bonds.

Adjustments are made in some of the smaller underlying issues, particularly the Central Branch Union Pacific first 4s, Plaza-Olive Building 6s, Cairo & Thebes first 4s, Little Rock & Hot Springs Western first 4s, and Boonville, St. Louis & Southern first 5s.

The holders of first and refunding mort-

gage 5 per cent bonds are offered 25 per cent in first mortgage fixed 4 per cent bonds, and 75 per cent in 5 per cent convertible income general mortgage bonds. The present general mortgage 4s get convertible income 4 per cent notes ranking next to the convertible income general mortgage bonds. The present convertible 5½ per cent notes get non-cumulative preferred stock of the new company.

The N. O. T. & M. first mortgage 5s would get 35 per cent in first mortgage 4 per cent bonds, 45 per cent in convertible income general mortgage bonds, 15 per cent in convertible income notes and 5 per cent in preferred stock. International-Great Northern first 5s get 55 per cent in first mortgage 4s and 45 per cent in convertible income general mortgage bonds. For first mortgage bonds of the N. O. T. & M. and I-G. N. bearing higher or lower rates of interest appropriate adjustment is made up or down in the percentage allocation of these new securities. The International-Great Northern, adjustment 6s get 70 per cent in the general mortgage bonds and 30 per cent in convertible income 4 per cent notes.

Each share of present Missouri Pacific preferred stock with its accumulations would get one share of new common, and present Missouri Pacific common would get one share of the new for each two and half shares of the old.

The plan provides for completing the transaction for acquiring the St. Joseph & Kansas City terminal properties of Terminal Shares, Inc. (Alleghany Corporation subsidiary), through issuance of securities in the new company, with full consideration of the master's recent report.

In the proposed exchange of securities, the determination of what each existing security is to receive in obligations of the new company bears a relation to what the property under each of the liens contributed in earnings available for fixed charges for the years 1932 to 1934 inclusive.

All classes of new securities except the proposed first mortgage bond are convertible into common stock at varying rates. The exercise of the conversion privilege by all holders of the proposed new convertible income general mortgage bonds would give them 85.2 per cent of the common stock, provided other proposed classes of securities do not avail of their conversion rights. If the conversion rights of holders of all securities presently to be issued are exercised, the holders of general mortgage bonds would receive about 68.7 per cent of the common stock.

Provision is made for the application of suitable proportions of income to retirement of debt. The retirement is so arranged that if earnings fail to reach former levels and continue to be below what is needed to support the proposed income obligations, reductions of debt will ultimately reach the level where earnings will sustain them.

Interest on convertible income general mortgage bonds and convertible income notes is to cumulate to the extent of the difference in percentage between the rate actually paid and the rate which would have been paid if debt retirement funds had not been operative as to these income obligations; otherwise their interest is non-cumulative. Interest will accrue on the accumulations.

It is contemplated that all indebtedness and preferred commitments of the new company shall eventually be retired, the former within the respective life of the obligation, thus avoiding refunding and incidental charges.

Figured on the basis of earnings for the depression years of 1932, 1933 and 1934, the proposed company, with the capital setup outlined in the plan, would have earned fixed charges on the average about 1.43 times. The total annual fixed charge of the new company would be $7,503,330, compared with the present fixed charge of $24,878,524. The consolidated company's net earnings available for interest, 1932-1934, were $10,734,208 on the average. If the net earnings should return to the 1930 level, the amount available for interest would be $28,476,608, and the fixed charges would be earned 3.80 times, leaving about $21,000,000 for income obligations and other corporate needs. A return to 1929 earnings of $34,534,868 would on the same basis cover fixed charges 4.60 times, leaving about $27,000,000 for income obligations and other corporate needs.

The plan contemplates that before computing earnings available for all income obligations there may be set apart for additions and betterments an amount not to exceed 3 per cent of the operating revenues for the year.

The board of directors of the new company would consist of 15 members. The Reconstruction Finance Corporation would have the right to approve the selection of two of these directors. The holders of general mortgage bonds would be accorded a similar right with respect to three directors, as will also the holders of convertible notes with respect to two directors. The preferred stock, voting as a class, would be entitled to elect three directors, the remaining directors being elected by the common stock.

In submitting the outline of its plan the company asked that a date be set by for a public hearing.

Net Deficit for Five Months $56,618,534

Class I railroads for the first five months of 1935 had a net deficit after interest and fixed charges of $56,618,534, according to

SELECTED INCOME AND BALANCE-SHEET ITEMS OF CLASS I STEAM RAILWAYS

Compiled from 143 Reports (Form IBS) Representing 149 Steam Railways

TOTALS FOR THE UNITED STATES (ALL REGIONS)

For the month of May 1935	For the month of May 1934		For the five months of 1935	For the five months of 1934
		Income Items		
$39,505,067	$39,699,194	1. Net railway operating income	$160,787,983	$184,829,268
11,783,378	13,346,790	2. Other income	63,188,461	67,122,056
51,288,445	53,045,984	3. Total income	223,976,444	251,951,324
11,241,285	11,251,864	4. Rent for leased roads	55,103,543	55,349,987
43,437,903	43,351,129	5. Interest deductions	217,493,106	216,752,921
1,396,456	1,780,260	6. Other deductions	7,998,329	9,184,675
56,075,644	56,383,253	7. Total deductions	280,594,978	281,287,583
		8. Net income:‡		
		8–01. After depreciation and retirements		
d 4,787,199	*d* 3,337,269		*d* 56,618,534	*d* 29,336,259
		8–02. Before depreciation and retirements		
11,373,788	12,513,489		23,686,369	50,079,669
		9. Dividend declarations (from income and surplus):		
12,554,422	13,301,656	9–01. On common stock	31,950,641	37,323,809
3,559,611	971,108	9–02. On preferred stock	7,845,482	4,837,943
			Balance at end of May 1935	Balance at end of May 1934
		Selected Asset Items		
		10. Investments in stocks, bonds, etc., other than those of affiliated companies (Total, Account 707)	$763,406,466	$767,603,597
		11. Cash	$352,506,130	$312,253,527
		12. Demand loans and deposits	10,851,936	33,129,895
		13. Time drafts and deposits	38,516,633	45,130,517
		14. Special deposits	63,326,576	43,298,532
		15. Loans and bills receivable	4,901,087	8,184,251
		16. Traffic and car-service balances receivable	53,991,113	55,582,239
		17. Net balance receivable from agents and conductors	45,912,789	45,401,145
		18. Miscellaneous accounts receivable	144,758,035	145,124,703
		19. Materials and supplies	302,385,824	305,423,681
		20. Interest and dividends receivable	43,745,459	45,000,050
		21. Rents receivable	2,905,493	2,683,394
		22. Other current assets	4,614,228	4,306,364
		23. Total current assets (Items 11 to 22)	$1,068,415,303	$1,045,518,298
		Selected Liability Items		
		24. Funded debt maturing within 6 months*	$217,005,139	$54,057,300
		25. Loans and bills payable†	320,570,268	338,638,771
		26. Traffic and car-service balances payable	67,663,325	69,956,000
		27. Audited accounts and wages payable	220,553,618	211,047,510
		28. Miscellaneous accounts payable	62,285,538	47,440,815
		29. Interest matured unpaid	340,195,989	257,217,783
		30. Dividends matured unpaid	4,640,543	4,639,687
		31. Funded debt matured unpaid	290,329,816	248,297,971
		32. Unmatured dividends declared	15,897,423	12,894,561
		33. Unmatured interest accrued	123,367,001	121,404,343
		34. Unmatured rents accrued	40,622,922	39,881,046
		35. Other current liabilities	18,181,192	16,657,640
		36. Total current liabilities (Items 25 to 35)	$1,504,307,635	$1,368,076,127
		37. Tax liability (Account 771):		
		37–01. U. S. Government taxes	$37,089,242	$36,379,115
		37–02. Other than U. S. Government taxes	138,199,131	144,622,593

* Includes payments which will become due on account of principal of long-term debt (other than that in Account 764, Funded debt matured unpaid) within 6 months after close of month of report.

† Includes obligations which mature less than 2 years after date of issue.

d Deficit.

‡ May, 1935, income as reported was increased by credits to operating expenses on account of reversal of charges previously made for liability under the Railroad Retirement Act. These credits for May, 1935, amounted to $8,659,753, and for the 5 months ended with May, 1935, the net credit is $4,525,821.

NET INCOME OF LARGE STEAM RAILWAYS WITH ANNUAL OPERATING REVENUES ABOVE $25,000,000

Name of railway	Net income after depreciation and retirements, For the five months of 1935	Net income after depreciation and retirements, For the five months of 1934	Net income before depreciation and retirements, For the five months of 1935	Net income before depreciation and retirements, For the five months of 1934
Alton R. R.	d 1,020,945	d 819,035	d 888,286	d 748,439
Atchison, Topeka & Santa Fe Ry. System*	d 897,551	d 1,307,215	3,867,726	3,461,799
Atlantic Coast Line R. R.	195,623	1,809,809	1,151,583	2,684,804
Baltimore & Ohio R. R.	d 2,570,144	d 3,014,327	309,728	188,440
Boston & Maine R. R.	d 333,408	d 549,579	353,061	121,386
Central of Georgia Ry.	d 1,201,205	d 1,129,875	d 863,925	d 801,016
Central R. R. of New Jersey	d 562,519	118,681	137,817	1,016,470
Chesapeake & Ohio Ry.	10,214,578	11,462,716	13,659,134	14,414,163
Chicago & Eastern Illinois Ry.	d 664,575	d 890,859	d 409,381	d 701,573
Chicago & North Western Ry.	d 5,403,384	d 4,962,498	d 3,254,029	d 3,075,936
Chicago, Burlington & Quincy R. R.	d 2,085,849	96,844	40,938	1,424,838
Chicago Great Western R. R.	d 820,062	d 532,829	d 601,955	d 317,509
Chicago, Milwaukee, St. Paul & Pacific R. R.	d 7,464,648	d 7,197,076	d 5,110,355	d 4,322,636
Chicago, Rock Island & Pacific Ry.	d 6,952,628	d 5,580,589	d 5,078,018	d 3,559,721
Chicago, St. Paul, Minneapolis & Omaha Ry.	d 1,234,979	d 843,291	d 971,016	d 612,568
Delaware & Hudson R. R.	d 953,863	d 800,215	d 533,940	d 344,283
Delaware, Lackawanna & Western R. R.	d 633,511	d 212,048	500,018	842,893
Denver & Rio Grande Western R. R.	d 1,983,045	d 1,387,698	d 1,486,666	d 962,479
Elgin, Joliet & Eastern Ry.	831,418	d 135,928	1,205,431	245,341
Erie R. R. (including Chicago & Erie R. R.)	d 743,906	875,885	1,007,568	2,808,723
Grand Trunk Western R. R.	d 146,952	d 181,685	303,366	205,587
Great Northern Ry.	d 3,909,906	d 5,937,603	d 2,497,318	d 4,436,657
Illinois Central R. R.	d 1,442,512	d 367,915	1,438,219	2,441,468
Lehigh Valley R. R.	d 444,054	99,862	554,209	929,331
Long Island R. R.	d 892,711	d 288,454	d 434,624	122,912
Los Angeles & Salt Lake R. R.	d 235,425	d 10,407	84,227	273,724
Louisville & Nashville R. R.	1,075,535	2,221,047	2,865,146	3,962,598
Minneapolis, St. Paul & Sault Ste. Marie Ry.	d 3,006,660	d 2,616,150	d 2,551,537	d 2,011,146
Missouri-Kansas-Texas Lines	d 2,282,275	d 1,429,492	d 1,737,293	d 1,029,507
Missouri Pacific R. R.	d 7,080,882	d 5,202,609	d 5,255,851	d 3,207,783
New York Central R. R.†	d 3,423,197	d 1,640,074	3,510,904	4,728,844
New York, Chicago & St. Louis R. R.	1,521	433,776	685,231	997,825
New York, New Haven & Hartford R. R.	d 1,578,878	d 1,332,782	d 136,806	345,116
Norfolk & Western Ry.	7,755,018	8,753,539	9,473,342	10,725,035
Northern Pacific Ry.	d 5,370,406	d 3,612,259	d 4,010,211	d 2,413,740
Oregon Short Line R. R.	d 194,816	d 2,392	233,670	398,922
Oregon-Washington R. R. & Navigation Co.	d 1,717,111	d 1,441,382	d 1,469,179	d 1,222,573
Pennsylvania R. R.	7,421,128	8,599,584	15,948,341	17,308,825
Pere Marquette Ry.	383,187	500,678	1,457,442	1,444,722
Pittsburgh & Lake Erie R. R.	1,062,466	1,152,364	1,775,018	2,128,312
Reading Co.	1,854,063	3,489,964	3,106,979	4,802,748
St. Louis-San Francisco Ry.	d 5,167,752	d 3,737,256	d 3,866,040	d 2,420,853
St. Louis Southwestern Lines	d 196,769	d 462,219	64,658	d 245,439
Seaboard Air Line Ry.	d 2,335,448	d 2,155,951	d 1,566,663	d 1,418,784
Southern Ry.	d 2,146,807	d 524,868	d 973,509	775,142
Southern Pacific Transportation System‡	d 3,439,157	d 4,129,102	d 321,803	d 911,993
Texas & Pacific Ry.	43,441	166,267	546,750	665,897
Union Pacific R. R.	4,368,217	5,937,826	6,029,872	7,742,307
Wabash Ry.	d 996,691	d 1,066,938	d 93,708	d 322,018
Yazoo & Mississippi Valley R. R.	d 1,224,261	d 993,379	d 1,007,076	d 763,210

* Includes Atchison, Topeka & Santa Fe Ry., Gulf, Colorado & Santa Fe Ry. and Panhandle & Santa Fe Ry.
† Includes Boston & Albany, lessor to New York Central R. R.
‡ Includes Southern Pacific Company and Texas & New Orleans R. R.
d Deficit.

the Interstate Commerce Commission's monthly compilation of selected income and balance-sheet items, as compared with a deficit of $29,336,259 in the corresponding period of last year. For the month of May the deficit was $4,787,199, as compared with $3,337,269 in May, 1934.

Odd Fellows' Picnic Requires Six Trains

Six trains made up of 62 coaches and 6 lunch cars were required to carry 4,635 persons attending the Odd Fellows' picnic held at Bond on the Dotsero cutoff of the Denver & Rio Grande Western on July 21.

Demands Slowing Down of High-Speed Trains

A petition has been filed with the Illinois Commerce Commission by the alderman of the forty-first ward, Chicago, seeking to prohibit streamlined trains from traveling at high speeds through urban residential districts and demanding a 30-mile-an-hour speed limit within the city limits.

U. P. Streamliner Derailed

The Union Pacific Streamliner City of Portland, enroute to that city on its tenth round trip, was derailed at Nugget, Wyo., on July 24 when an axle broke and caused the truck to take a siding switch. Two Pullman cars "jack knifed" and one of them sideswiped a water column and tool house. At the time of the accident the train was traveling 30 m.p.h. Passengers, none of whom was injured, were transferred to a steam train and transported to Portland. In the meantime the streamliner's sleeping cars were rerailed and the train proceeded under its own power to Pocatello, where final repairs to the truck and the outside sheeting of one of the sleeping cars were made.

Develop Standards for Mechanical Drawing

For the purpose of setting up standards of practice to be followed in the preparation of mechanical drawings, a graphical "dictionary" of drawings has been developed, according to an announcement by the American Standards Association, which has adopted the new work as standard. The preparation of the dictionary was sponsored by the Society for the Promotion of Engineering Education and the American Society of Mechanical Engineers, the work being done under the direction of a committee of the A. S. A., of which Dean Franklin DeR. Furman of the Stevens Institute of Technology was chairman. Subcommittees undertook studies on the various phases of the subject, such as specifications for paper and cloth, methods of indicating dimensions, lettering, drawing layout, line work and graphical symbols for drawings. Questionnaires were sent to 900 organizations interested in mechanical drawing asking for details as to individual practices, the returns being codified and used as the basis for the first draft of the standard.

I. C. C. Commissioners to Serve Until Successors Qualify

President Roosevelt has signed the bill, H. R. 4751, providing that members of the Interstate Commerce Commission, upon the expiration of their terms, may serve until their successors have been appointed and qualified. This is to prevent vacancies on the commission such as the one existing now because there has been no new appointment to succeed P. J. Farrell, whose term expired on December 31.

Southern Proposes Continuation of Reduced Fare Experiment

The Southern Railway and system lines have applied to the Interstate Commerce Commission for an extension from September 30 to March 31, 1936, of its orders prescribing passenger fare bases in several states in the South to enable these lines to continue for another six months the experimental passenger fares of one and one-half cent a mile in coaches, three cents a mile in sleeping cars, and two and one-half cents a mile in sleeping cars for round trips, without Pullman surcharge.

Special Rule Asked for Long-And-Short-Haul Bill

Representative Pettengill, of Indiana, appeared at a hearing before the House rules committee on July 30 to urge a special rule providing for early consideration by the House of his bill, H. R. 3263, to eliminate the long-and-short-haul clause of Section 4 of the interstate commerce act, on which a favorable report had been made by the House committee on interstate and foreign commerce. The committee reported a special rule for the Eastman bus-truck bill but expected to hold further hearings later in the week on the Pettengill bill.

Appropriation for Railroad Retirement Board

The Senate on July 24 passed a deficiency appropriation bill including an appropriation of $35,000 for the Railroad Retirement Board to meet its expenses since May 1 and to enable it to liquidate its affairs, including also the preparation of a report upon its activities. The expenses of the board were to have been met from contributions by railroads and their employees to a railroad retirement fund but the comptroller general of the United States has ruled that it became nonexistent upon the decision of the Supreme Court of the United States on May 6 that the railroad retirement act was unconstitutional.

R.F.C. Purchases Railroad Securities from P.W.A.

The Reconstruction Finance Corporation and the Federal Emergency Administration of Public Works have announced an agreement by which the R. F. C. is to purchase

from the P. W. A. securities received by it for loans including those given by 18 railroads to the amount of $108,675,500. These include $31,900,000 of Pennsylvania serial notes and $19,092,000 of Pennsylvania equipment trust certificates; $12,000,000 of Southern Pacific collateral notes, $10,686,000 of Erie equipment trust certificates, and $10,600,000 of Illinois Central equipment trust certificates. Within its discretion the R. F. C. will sell the securities to private investors and the funds furnished by it will enable the P. W. A. to make additional loans.

Tentative Tax Bill Introduced

A "soak-the-rich" tax bill embodying several changes from earlier proposals was reported by the House ways and means committee on Tuesday and efforts were to be made to pass it during the week. It proposes a graduated corporation income tax but with a much narrower range than had been suggested, ranging from 13¼ per cent on incomes of less than $15,000 up to 14¼ per cent on incomes exceeding that amount, in place of the President's proposal for rates ranging from 10¾ per cent to 16¾ per cent. This would, however, result in an increase (for most railroads of any size) from the present rate of 13¾ per cent. The bill also proposes a graduated excess profits tax based on the percentage return on adjusted capital investment, ranging from 5 per cent on profits between 8 and 12 per cent up to 20 per cent on profits over 25 per cent.

A Century of German Railways

An exhibit entitled "A Century of German Railways" is being presented to the German public by the Reichsbahn, beginning on July 14, coincident with the opening of the Jubilee Exhibition of the Nuremberg Museum of Public Conveyance, which had been enlarged and rehabilitated for the occasion. This exhibit, which will continue until October, commemorates 100 years of railway development in Germany, the first railway constructed on German soil having been opened for business from Nuremberg to Fuerth of July 14, 1835. The exhibit is being held in the Nuremberg terminal, where 20,000 square meters of indoor space and 40,000 square meters outdoor space, have been devoted to a portrayal of the century of progress of German railway construction and development. The exhibit is encircled with a model of the Ludwigsbahn, the original railway between Nuremberg and Fuerth.

Passenger Operating Ratio Increased in 1934

Passenger and allied services of the railroads were conducted in 1934 at an operating ratio of 123.16, as compared with 121.43 in 1933, while the freight service was conducted at an operating ratio of 64.91, according to the Interstate Commerce Commission's annual compilation of operating revenues and expenses by class of service. The operating revenues assigned or apportioned to passenger service in 1934 amounted to $546,468,075, while the operating expenses so assigned or apportioned amounted to $673,056,870. In the eastern district the ratio of expenses to revenues was 107.34 in 1934, as compared with 103.99 in 1933; in the southern district, however, the ratio showed a decrease to 139.74 in 1934 as compared with 146.74 in 1933; and in the western district it was 143.23 as compared with 141.87 in 1933.

Bus-Truck Bill Debated in House

The long campaign to bring interstate motor vehicle transportation on the public highways under a form of regulation by the Interstate Commerce Commission somewhat comparable to that applied to the railroads seemed nearing a successful conclusion on Wednesday, July 31, when the House devoted a long afternoon session to debate on the Eastman motor carrier bill, S. 1629, which was passed by the Senate on April 16. Debate was begun under a special rule reported by the rules committee the day before after a hearing but was not concluded on Wednesday. Representative Wadsworth, of New York, who led a fight against the bill, moved to recommit the bill to the committee on interstate and foreign commerce and a roll-call vote on the motion was postponed until Thursday.

The bill as taken up in the House included several amendments proposed by the committee as to details while following the form of the Senate bill. In committee of the whole an amendment was adopted to exempt trucks carrying agricultural products, proposed by Representative Jones, of Texas, but one proposing to establish an eight-hour day for bus and truck drivers, offered by Representative Monaghan, was defeated.

Plan Adopted for Use of San Francisco-Oakland Bay Bridge

The Southern Pacific, the Key System, the California Toll Bridge Authority and Bay Area cities have entered into an arrangement for the operation of interurban trains over the San Francisco-Oakland Bay bridge, whereby, for an 18 months' test period, after bridge train service starts, the railroads will absorb bridge tolls in the present fares, and guarantee not to ask authority to increase rates during that time. The state will reserve the right to cancel the private railroads' contracts and turn the bridge railway over to public ownership at the end of any seven-year period, the railroads having no claim for severance damages. The Interurban Electric Railway Company, a subsidiary of the Southern Pacific, will take over the Southern Pacific's East Bay lines and run cars over the bridge. Through heavy passenger trains will not use the bridge but passengers will transfer at Oakland to interurban trains instead of boarding ferry boats at Oakland Mole as at present.

New Equipment

New freight cars installed by the Class I railroads in the first six months of 1935 totaled 1,868, according to reports received by the Association of American Railroads. In the same period last year, 5,360 new freight cars were placed in service, and, in the same period two years ago, there were 1,251. Twenty-five new steam locomotives and 81 new electric locomotives were placed in service in the first six months of this year. New freight cars on order on July 1 totaled 2,428, compared with 17,813 on the same day in 1934 and 1,205 on the same day in 1933.

The railroads on July 1 this year had on order 6 new steam locomotives and 22 new electric locomotives. New steam locomotives on order on July 1, 1934, totaled 40, and on the same date in 1933, there was one. New electric locomotives on order on July 1, 1934, totaled 107. No reports are available as to the number on order on July 1, 1933. Freight cars and locomotives leased or otherwise acquired are not included in the above figures.

Legislative Bills Enacted in Illinois

Several bills affecting railroads were enacted at the recent session of the Illinois state legislature. H. B. 733 and H. B. 736, amending Section 75a of the Roads and Bridges Act and Section 58 of the Public Utility Act, authorizes the Illinois Commerce Commission to close grade crossings when the public convenience served by the crossings is not such as to justify further retention. H. B. 473 validates the abolishing of grade crossings within any city, village, town or road district in all cases wherein the Illinois Commerce Commission, after due notice and hearing prior to the passage of this Act, issued an order abolishing the same.

H. B. 146 adds Section 40a to the Public Utility Act which provides that when any blind person is accompanied by a dog that serves as a guide or leader for such blind person, neither the blind person nor the dog shall be denied the facilities of any common carrier, nor shall such blind person be denied the immediate custody of the dog while riding upon such a common carrier, provided that such dog shall be muzzled while using the facilities of such common carrier. H. B. 514 amends Section 3 of the Act requiring railroads to maintain a capital stock transfer office in Illinois, to make the language conform with the principles of the Civil Practice Act by substituting "ordinary civil action" for "action of debt," in reference to the collection of penalties.

Illinois Central L.C.L. Policy Recovering Traffic

Carrying express shipments at freight rates, a plan which the Illinois Central and the Railway Express Agency, established in August of last year in the territory south of St. Louis, Mo., Centralia, Ill., and Evansville, Ind., and east of the Mississippi river, and applied on 560 major items in the first five major freight classifications, has resulted in increased merchandise shipments. Of the 61,000,000 lb. handled during 11 months, approximately 68.1 per cent has been recovered from competing carriers, 25 per cent has been diverted from regular freight service; the balance of 6.3 per cent was from regular express service. Traffic diverted from trucks accounted for 62.5 per cent of the total tonnage hauled; diversion from other railroads, 4 per cent; from independent express agencies, 1 per cent; from waterways, 0.5 per cent; and from parcel post, 0.2 per cent. These figures are based upon

Continued on next left-hand page

USE "Permissible" WEIGHT TO FULL ADVANTAGE

Bridges and track determine the permissible weights at the "Power Points." » » » Get the most use out of this permissible weight by applying the maximum power at the "Power Points." » » » Compared with locomotives ten years old and over, modern locomotives apply twice the power at these points. » » » Doubling the power at the "Power Points" doubles the drawbar horsepower. » » » Doubling the drawbar horsepower doubles the gross ton-miles per train hour. » » » You can only get the most out of your transportation plant by using locomotives that apply maximum power at the "Power Points."

LIMA LOCOMOTIVE WORKS INCORPORATED

LIMA LOCOMOTIVE WORKS, INCORPORATED, LIMA, OHIO

replies of 600 consignees, or about one-fifth of the total tonnage hauled.

Under the plan in effect, free pick-up and delivery service is provided under an arrangement with the Railway Express Agency. This is available at nearly all points in the experimental territory. The rates charged are the same as regular L.C.L. class rates, there being no minimum weight requirements and the distance being limited to 400 miles.

Effective August 11, the Illinois Central will offer pick-up and delivery service on L.C.L. freight to points east of the Mississippi river on its own lines at distances within 360 miles with where the class rate is $1.35 or more. An allowance of 5 cents per 100 lb. will be made on shipments eligible for this service, where the merchandise is delivered by the shipper to railroad receiving stations or picked up by the receiver at delivering stations. Where the distance involved is greater than 360 miles and the rate exceeds $1.35, the pick-up and delivery service will be offered at an extra charge of 10 cents per 100 lb.

Canada's Reconstruction Party Opposes Railway Unification

Hon. H. H. Stevens, former Canadian Minister of Trade and Commerce, who resigned from the Bennett Cabinet last year and is now in the federal election campaign as head of the Reconstruction party, last week end at Toronto issued a statement in which he opposed merging of the Canadian National and Canadian Pacific. He said in part:

"The Reconstruction party does not believe that amalgamation under private ownership offers a solution of Canada's railway problems. Neither does it believe that unification of management substantially improves the situation, let alone solving the problem.

"The question of railway amalgamation, or even unification of railway management, is a serious one for the Canadian people. The major reduction in expense under unified management, or complete merging of the two systems, can only be brought about by reducing the staffs of each road. The direct sufferers will, therefore, of necessity, be some of the employees of both the C.P.R. and the C.N.R. The less direct sufferers will be the people of Canada generally, because:

"1. To further reduce expenses, fewer trains will have to be run and passengers' schedules cut to a minimum.

"2. If the outstanding debt of the railways is not to be increased, they cannot be modernized.

"3. The merging of the assets of the two systems under one trust board of private directors will set up a virtual dictatorship more powerful than Parliament, to which we are unalterably opposed.

"The Reconstruction Party is also opposed to the sale of the Canadian National to a group of international financiers, or to the Canadian Pacific. Such a sale would be preposterous, as no private group could withstand the recurring annual deficits of the C.N.R. system, amounting as they do each year to approximately $50,000,000.

"The railway problem must be solved without recourse to mere short-sighted moves to unify or amalgamate. There is only one sound solution and that is to create in Canada sufficient business, which in itself creates traffic in goods and passengers, to bring the earnings of the railways up to the point that they are running profitably. The plans set forth in the other bulletins of the Reconstruction Party describe sufficient projects to create ample enterprise in Canada to do this.

"However, at the same time, the railways themselves must do one thing, and this will be insisted upon—one thing which has not been done before—they must pay more attention to the efficient running of their own business in order to keep their expenses down and their service up. This will solve the railway problem with the exception of one difficulty.

"The debt of the C.N.R. is far in excess of its assets. The value of the assets of the C.N.R. will be written down in accordance with the recommendations of a competent Board of Railway Appraisers.

"The two railway systems were constructed to carry the goods produced in this country and the people from one destination to another. In rendering this service they expected to make a profit; the profits were to be made out of the business done, not out of changes in the capital structure, amalgamations or unified managements."

Southwestern Claim Agents' Association

The twenty-first annual meeting of the Southwestern Railway Claim Agents' Association was held at Galveston, Tex., on July 11-13, President E. W. Sprague, general claim agent of the Illinois Central, presiding. Officers elected for the ensuing year are: President, R. O. Carter, claim agent of the Missouri-Kansas-Texas; first vice-president, H. L. Davis, claim agent of the Southern Pacific; second vice-president, F. W. Middleton, assistant to the president of the Louisiana, Arkansas & Texas; and secretary-treasurer, F. D. Wilkins, general claim agent of the Texas Electric. The next annual meeting will be held at New Orleans.

C. T. Hennessy of the legal department of the San Antonio Public Service Company spoke on the Claim Booster and What We Have Done to Stop Him, discussing methods commonly adopted by claim boosters in procuring employment from those who have suffered accidents. As an efficient method of handling claims with attorneys, in cases where contact has been procured by unethical means, he suggested a letter declining the claim with a copy to the claimant advising that the claim would only be handled direct with the claimant or through litigation.

C. H. Schutte, assistant general claim agent of the Missouri-Kansas-Texas, spoke on What Advantages or Results Have Been Obtained through the Southwestern Railway Claim Agents' Association Since Its Organization. F. W. Middleton presented a paper on What Method Should Be Employed by Claim Men in Keeping Up with Their Work.

Frank J. Wren, division attorney of the Gulf, Colorado & Santa Fe, discussed grade crossing accidents, placing special emphasis on the trends of decisions of suits growing out of such accidents and on the methods of investigation. He pointed out the conflicts that exist in decisions of Texas courts and the difficulty of determining whether liability exists under these decisions.

G. P. Reddick, manager of claims and damages of the Dallas Railway & Terminal Company, presented a paper on What Should Be Shown in an Investigation Where Discovered Peril Is the Issue. He outlined the elements usually making up such an issue and detailed the character of investigation necessary to present a proper defense.

Others addressing the meeting included H. A. Rowe, president of the Association of Railway Claim Agents and claims attorney of the Delaware, Lackawanna & Western; O. F. Ellington, general claim agent of the Texas & Pacific; Dr. A. Philo Howard of the Missouri Pacific Hospital Association; J. A. Glen, assistant to general manager of the Gulf, Colorado & Santa Fe; N. S. Draughon, claim adjuster of the Gulf, Colorado & Santa Fe; G. E. Lewis, claim agent of the Texas & Pacific; S. W. O'Flynn, general claim agent of the Missouri Pacific; and O. W. Portman, general claim agent of the Ft. Worth & Denver City.

Meetings & Conventions

The following list gives names of secretaries, date of next or regular meetings and places of meetings:

AIR BRAKE ASSOCIATION.—T. L. Burton, Room 3400 Empire State Bldg., New York, N. Y.

ALLIED RAILWAY SUPPLY ASSOCIATION.—F. W. Venton, Crane Company, 836 S. Michigan Ave., Chicago, Ill. To meet with Air Brake Association, Car Department Officers' Association, International Railroad Master Blacksmiths' Association, International Railway Fuel Association, International Railway General Foreman's Association, Master Boiler Makers' Association and the Traveling Engineers' Association.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—W. R. Curtis, F. T. R., M. & O. R. R., Chicago, Ill.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 816 McCormick Bldg., Chicago, Ill. Annual meeting, September 17-19, 1935, Royal York Hotel, Toronto, Canada.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York, N. Y. Annual Meeting, October 8-9, 1935, Hotel Alms, Cincinnati, Ohio.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.— F. O. Whiteman, Union Station, St. Louis, Mo.

AMERICAN ASSOCIATION OF RAILWAY ADVERTISING AGENTS.—E. A. Abbott, Poole Bros., Inc., 85 W. Harrison St., Chicago, Ill. Annual meeting, January, 17-18, 1936.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—F. R. Borger, C. I. & L. Ry., 836 S. Federal St., Chicago, Ill. Annual meeting, October 15-17, 1935, Clift Hotel, San Francisco, Cal.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Chicago, Ill. Annual meeting, October 15-17, 1935, Hotel Stevens, Chicago, Ill. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY CAR INSTITUTE.—W. C. Tabbert, 19 Rector St., New York, N. Y.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—E. H. Gurton, Mgr., Land Settlement and Development, C. N. R., St. Paul, Minn. Next meeting, December 5-6, 1935, Chicago, Ill.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—Works in co-operation with the Association of American Railroads, Division IV.—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill. Annual meeting, March 10-12, 1936, Palmer House, Chicago, Ill.

AMERICAN RAILWAY MAGAZINE EDITORS' ASSOCIATION.—M. Fenaja, Missouri Pacific Lines

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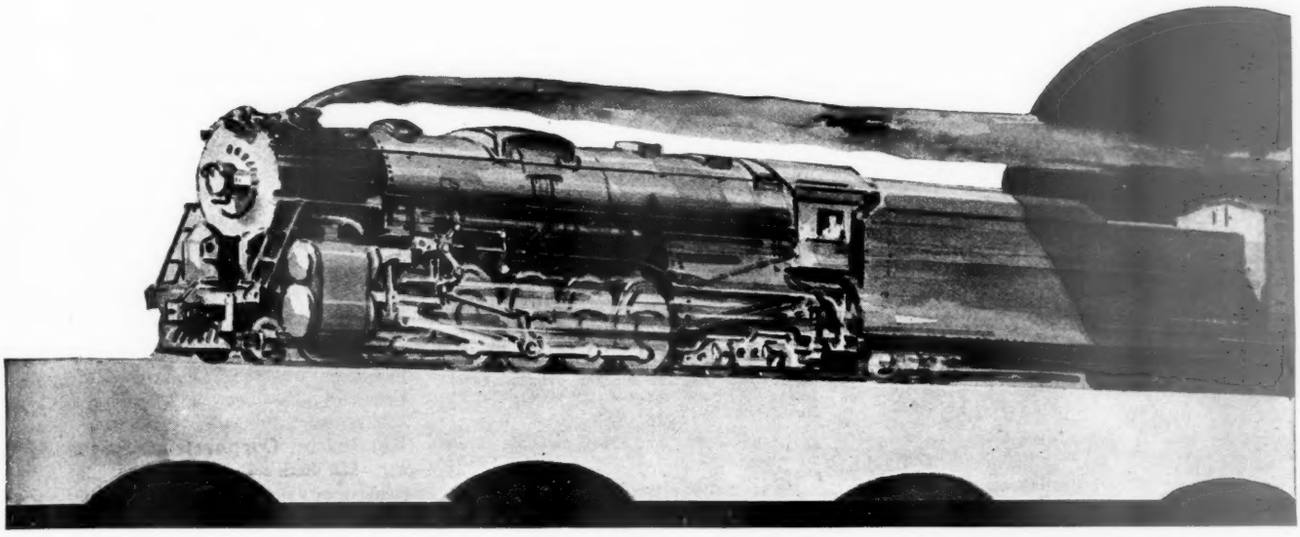
SPEED MAKES MONEY...



The economical speed of a freight train over a division is that speed which produces the greatest gross ton-miles per train hour. In this way the unit cost of the ton-miles produced is the lowest. Safety, of course, must fix the maximum speed.

Such a speed will also increase the capacity of a given amount of plant in that more ton-miles are moved in a given time. Thus, the investment unit cost of movement can also be the minimum under those conditions.

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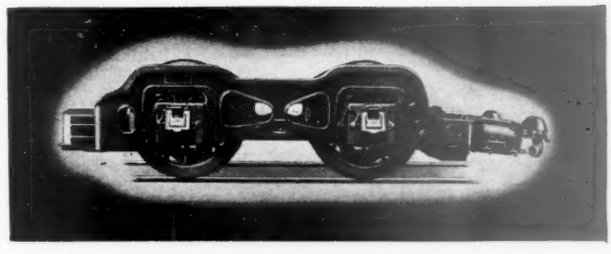

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Magazine, Missouri Pacific Lines Bldg., St. Louis, Mo.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C. M. St. P. & P. R. R., 11402 Calumet Ave., Chicago, Ill.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—R. E. Schindler, Union Trust Bldg., Washington, D. C. Annual meeting, beginning October 21, 1935, New Orleans, La.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—C. E. Davies, 29 W. 39th St., New York, N. Y.

Railroad Division.—Marion B. Richardson, 192 E. Cedar St., Livingston, N. J.

AMERICAN TRANSIT ASSOCIATION.—Guy C. Hecker, 292 Madison Ave., New York, N. Y. Annual meeting, September 23-25, 1935, Ambassador Hotel, Atlantic City, N. J.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—H. L. Dawson, 1427 Eye St., N. W., Washington, D. C. Annual meeting, January 28-30, 1936, Memphis, Tenn.

ASSOCIATION OF AMERICAN RAILROADS.—H. J. Forster, Transportation Bldg., Washington, D. C.

Operations and Maintenance Department.—J. R. Downes, Vice-President, Transportation Bldg., Washington, D. C.

Division I.—Operating.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Freight Station Section.—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago, Ill.

Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Protective Section.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Safety Section.—J. C. Caviston, 30 Vesey St., New York, N. Y. Annual meeting, October 15-16, 1935, Louisville, Ky.

Telegraph and Telephone Section.—W. A. Fairbanks, 30 Vesey St., New York, N. Y.

Division II. — Transportation. — G. W. Covert, 59 E. Van Buren St., Chicago, Ill.

Division IV. — Engineering. — E. H. Fritch, 59 E. Van Buren St., Chicago, Ill. Annual meeting, March 10-12, 1936, Palmer House, Chicago, Ill.

Construction and Maintenance Section.—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill. Annual meeting, March 10-12, 1936, Palmer House, Chicago, Ill.

Electrical Section.—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill.

Signal Section.—R. H. C. Balliet, 30 Vesey St., New York, N. Y.

Division V.—Mechanical.—V. R. Hawthorne, 59 E. Van Buren St., Chicago, Ill.

Division VI.—Purchases and Stores.—W. J. Farrell, 30 Vesey St., New York, N. Y.

Division VII.—Freight Claims. — Lewis Pilcher, 59 E. Van Buren St., Chicago, Ill.

Division VIII. — Motor Transport. — George M. Campbell, Transportation Bldg., Washington, D. C.

Car-Service Division.—C. A. Buch, Transportation Bldg., Washington, D. C.

Traffic Department.—A. F. Cleveland, Vice-President, Transportation Bldg., Washington, D. C.

Finance, Accounting, Taxation and Valuation Department.—E. H. Bunnell, Vice-President, Transportation Bldg., Washington, D. C.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—F. L. Johnson, Chief Clerk and Claim Agent, General Claims Dept., Alton R. R., 340 W. Harrison St., Chicago, Ill. Annual meeting, 1936, St. Paul, Minn.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., 1519 Daily News Bldg., 400 W. Madison St., Chicago, Ill.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—L. F. Flanagan, Detroit Graphite Company, Room 1158, 20 N. Wacker Drive, Chicago, Ill. Meets with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 2276 Wilson Ave., N. D. G., Montreal, Que. Regular meetings, second Monday of each month, except June, July and August, Windsor Hotel, Montreal, Que.

CAR DEPARTMENT OFFICERS' ASSOCIATION.—A. S. Sternberg, M. C. B. Belt Ry. of Chicago, 7926 S. Morgan St., Chicago, Ill.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—G. K. Oliver, 2514 W. 55th St., Chicago, Ill. Regular meetings, second Monday of each month, except June, July and August, La Salle Hotel, Chicago, Ill.

CAR FOREMEN'S ASSOCIATION OF LOS ANGELES.—J. W. Krause, Room 299, 610 S. Main St., Los Angeles, Cal. Club not active at present.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—E. G. Bishop, Illinois Central R. R., East St. Louis, Ill.

CENTRAL RAILWAY CLUB OF BUFFALO. — Mrs. M. D. Reed, 1817 Hotel Statler, McKinley Square, Buffalo, N. Y. Regular meetings, second Thursday of each month, except June, July and August, Hotel Statler, Buffalo, N. Y.

CINCINNATI RAILWAY CLUB.—D. R. Boyd, 2920 Utopia Place, Hyde Park, Cincinnati, Ohio. Operation suspended indefinitely.

CLEVELAND RAILWAY CLUB.—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings temporarily suspended.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—T. D. Smith, 1660 Old Colony Bldg., Chicago, Ill.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha St., Winona, Minn.

MASTER BOILER MAKERS' ASSOCIATION.—A. F. Stiglmeier, 29 Parkwood St., Albany, N. Y.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—Clyde S. Bailey, 810 18th St., N. W., Washington, D. C. Annual meeting, October 15-18, 1935, Hermitage Hotel, Nashville, Tenn.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, Suite 322, 910 S. Michigan Ave., Chicago, Ill. Exhibit at A. R. E. A. Convention, March 9-12, 1936, The Coliseum, Chicago, Ill.

NATIONAL SAFETY COUNCIL.—Steam Railroad Section (see Safety Section, Association of American Railroads).

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, second Tuesday of each month, except June, July, August and September, Copley-Plaza Hotel, Boston, Mass.

NEW YORK RAILROAD CLUB.—D. W. Pye, 30 Church St., New York, N. Y. Regular meetings, third Friday of each month, except June, July and August, 29 W. 39th St., New York, N. Y.

PACIFIC RAILWAY CLUB.—William S. Wollner, P. O. Box 3275, San Francisco, Cal. Regular meetings, second Thursday of each month, alternately at San Francisco and Oakland, excepting July at Los Angeles and October at Sacramento.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—(Merged with Association of American Railroads.)

RAILWAY BUSINESS ASSOCIATION.—P. H. Middleton (Treas. and Asst. Sec.), First National Bank Bldg., Chicago, Ill. Annual meeting, November, 1935, Hotel Stevens, Chicago, Ill.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 1941 Oliver Bldg., Pittsburgh, Pa. Regular meetings, fourth Thursday of each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—Edward Wray, 9 S. Clinton St., Chicago, Ill. Meets with Association of Railway Electrical Engineers.

RAILWAY FIRE PROTECTIVE ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Annual meeting, October 15-16, 1935, Southern Hotel, Baltimore, Md.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1941 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division, Purchases and Stores Division, and Motor Transport Division, Association of American Railroads.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Company, 30 Church St., New York, N. Y. Meets with Telegraph and Telephone Section of A. A. R., Division I.

RAILWAY TIE ASSOCIATION.—I. C. Rowe, 2091 Railway Exchange Bldg., St. Louis, Mo.

RAILWAY TREASURY OFFICERS' ASSOCIATION. — L. W. Cox, 1428 Broad Street Station Bldg., Philadelphia, Pa. Annual meeting, September 20-21, 1935, Netherland-Plaza Hotel, Cincinnati, Ohio.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa. Annual meeting, September 17-19, 1935, Hotel Stevens, Chicago, Ill.

SIGNAL APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Company, 30 Church St., New York, N. Y. Meets with A. A. R., Signal Section.

SOCIETY OF OFFICERS, UNITED ASSOCIATIONS OF RAILROAD VETERANS.—M. W. Jones, Baltimore & Ohio, Mt. Royal Station, Baltimore, Md. Annual meeting, October 5-6, 1935, Hotel Sinton, Cincinnati, Ohio.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, 4 Hunter St., S. E., Atlanta, Ga. Regular meetings, third Thursday in January, March, May, July, September and November, Ansley Hotel, Atlanta, Ga.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—R. G. Parks, A. B. & C. R. R., Atlanta, Ga.

TOOL FOREMEN SUPPLIERS' ASSOCIATION.—E. E. Caswell, Union Twist Drill Co., 11 S. Clinton St., Chicago, Ill. Meets with American Railway Tool Foremen's Association.

TORONTO RAILWAY CLUB.—R. H. Burgess, P. O. Box 8, Terminal "A," Toronto, Ont. Regular meetings, first Friday of each month, except July, August and September, Royal York Hotel, Toronto, Ont.

TRACK SUPPLY ASSOCIATION. — D. J. Higgins, Gardner-Denver Company, 332 S. Michigan Ave., Chicago, Ill. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION. — W. O. Thompson, 1177 E. 98th St., Cleveland, Ohio.

WESTERN RAILWAY CLUB.—C. L. Emerson, C. M. St. P. & P., Chicago, Ill. Regular meetings, third Monday of each month, except June, July, August and September, Hotel Sherman, Chicago, Ill.

Supply Trade

The offices of the **Lundie Engineering Corporation** have been moved to 19 West Fiftieth street, New York.

Arthur D. Heffron, Jr., sales supervisor of the **Globe Steel Tubes Company,** Milwaukee, Wis., has been promoted to manager of sales of the Cleveland district, with headquarters at Cleveland, Ohio.

S. C. Mitchell, formerly advertising manager of the Leonard Refrigerator Company, has been appointed director of advertising and sales promotion for the **Kelvinator Corporation,** Detroit, Mich. Mr. Mitchell will be in charge of advertising and sales promotion activities for all Kelvinator products, including commercial refrigeration equipment and air conditioning.

The Morden Frog & Crossing Works, Chicago Heights, Ill., has entered into a contract with the Metropolitan Life Insurance Company for double coverage group insurance for all eligible employees, whereby employees will be covered by group life insurance in individual amounts of $1,000 and will receive weekly health and accident benefits of $10 in case of sickness or injury.

OBITUARY

Maurice L. Burgham, sales engineer for the past nine years of the Edgewater Steel Company, Pittsburgh, Pa., died on July 19 in that city, after an illness of two months. Mr. Burgham was born on April 3, 1901, at Parnassus, Pa. In 1923 he was graduated from the University of Pittsburgh, in the school of engineering. He held a second lieutenancy in the Officers' Reserve Corps of the United States Army.

TRADE PUBLICATION

FACTS ABOUT WELDED PIPE.—In a well-illustrated, 24-page booklet bearing this title, the Air Reduction Sales Company, New York, presents a discussion of the advantages and economies of the use of the new Aircowelding process in the welding of pipe joints in heating, plumbing and power installations. The booklet, which should be of particular interest to architects and building engineers, also discusses Aircobrazing in the installation of brass pipe systems, and includes general specifications for various classes of pipe welding work.

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Security Brick Arches

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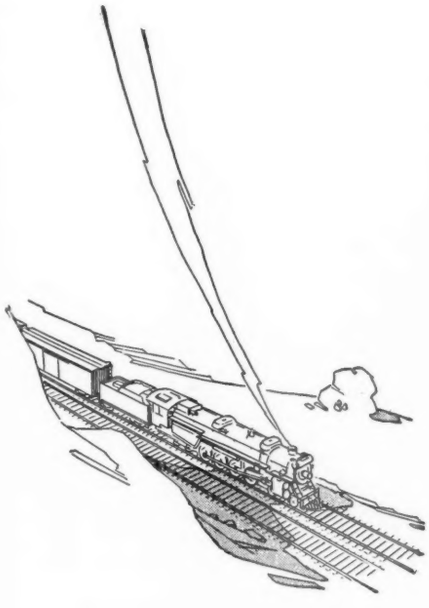
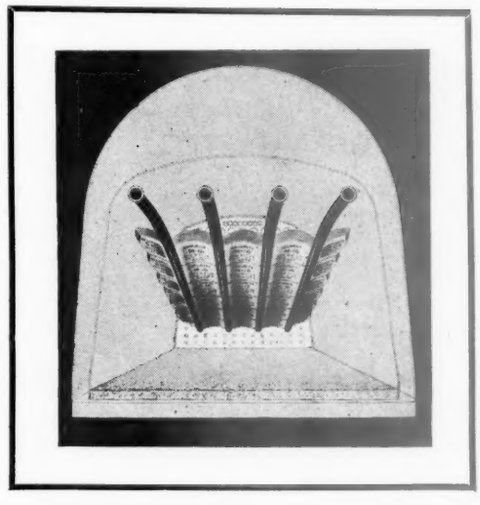
To show its full effectiveness as a fuel saver the firebox brick arch must be designed for the class of power in which it is to work.

Firebox designs are different and for full effectiveness the brick arch must be designed accordingly.

The Security Sectional Brick Arch is the result of many years of engineering and experience in locomotive operation, in studies of combustion and in the making of refractory brick.

Arch Company engineers over a period of many years have gained and applied a knowledge and experience nowhere else available. This knowledge and experience means many thousands of dollars each year in reduced fuel costs to the railroads of this country.





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SECURITY ARCHES
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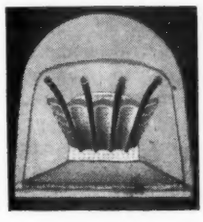
HARBISON-WALKER REFRACTORIES CO.
Refractory Specialists



AMERICAN ARCH CO.
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Locomotive Combustion Specialists » » »

Construction

CENTRAL OF NEW JERSEY.—Bids, due on August 9, have been invited for the construction of an underpass for New Jersey State Highway, Route No. 31 at Cornell boulevard, Raritan, N. J. The estimated cost of this project, as reported in the *Railway Age* of February 9, is $140,000.

GOLD COAST.—Examiner J. S. Prichard of the Interstate Commerce Commission has recommended, in a proposed report, that division 4 of the commission deny the application of this company for authority to construct a 90-mile line extending from Port Orford, Ore., to Leland.

PENNSYLVANIA.—This road has awarded to the Rust Engineering Company, Pittsburgh, Pa., a contract for the construction of a freight warehouse at P.R.R. Dock No. 6, Erie, Pa.

Equipment and Supplies

FREIGHT CARS

THE CHESAPEAKE & OHIO is inquiring for 100 automobile box cars of 50 tons' capacity, equipped with loaders.

THE NORFOLK SOUTHERN has ordered 500 box cars of 40-tons' capacity from the Pullman-Standard Car Manufacturing Company. Inquiry for this equipment was reported in the *Railway Age* of July 13.

THE CERRO DE PASCO COPPER COMPANY, New York, has issued tentative inquiries for 20 ore hopper cars for service in Peru, although it is understood that the company has not definitely decided to make the purchase at this time.

IRON AND STEEL

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC has ordered 175 tons of structural steel for a bridge at Lake, Wis., from the Milwaukee Bridge Company.

THE MISSOURI PACIFIC has ordered 10,000 tons of rail—4,150 tons from the Illinois Steel Company, 3,700 tons from the Colorado Fuel & Iron Company and 2,150 tons from the Inland Steel Company.

THE NEW YORK, CHICAGO & ST. LOUIS has ordered 1,800 tons of rail from the Illinois Steel Company, 1,200 tons from the Carnegie Steel Company and 1,000 tons from the Inland Steel Company.

MOTOR VEHICLES

THE CONNECTICUT COMPANY, an affiliate of the New York, New Haven & Hartford, has ordered 12 buses from the American Car & Foundry Motors Company.

Financial

ALTON.—*R.F.C. Loan Extension.*—The Interstate Commerce Commission, finding that this road is not in need of financial reorganization at the present time, has approved the extension for three years of the outstanding balance, $1,894,632.87, of a Reconstruction Finance Corporation loan which matured on July 28. The road has asked for a five-year extension.

BURLINGTON-ROCK ISLAND.—*Abandonment.*—This road has been authorized by the Interstate Commerce Commission to abandon its 25.18-mile branch line extending from Hubbard, Tex., to Hillsboro.

CHICAGO & NORTH WESTERN.—*Reorganization.*—April 1, 1936 has been set as the deadline for the filing and acceptance of a reorganization plan under Section 77 of the Federal Bankruptcy Act by the federal district court at Chicago. The deadline for the filing of claims against the road was set by the court as November 1. The order of June 28, allowing the present management to remain in control of the properties without appointment of trustees, was continued indefinitely. The court also granted a petition of the road to pay August 1 interest and maturities of $431,000 on equipment trust certificates. The fixing of the date of April 1, 1936, is in accordance with the opinion of the court that this type of proceeding should not drag on interminably.

TIONESTA VALLEY. — *Abandonment.* — The Interstate Commerce Commission has authorized the abandonment of that part of the line from Sheffield Junction, Pa., to Hallton, 17 miles.

UNION PACIFIC.—*Lease of Subsidiary Lines Approved.*—In a supplemental report the Interstate Commerce Commission, Division 4, has approved and authorized the lease by this company of the railroads and properties of the Oregon Short Line, the Oregon-Washington Railroad & Navigation Company, the Los Angeles & Salt Lake, and the St. Joseph & Grand Island, to enable unified operation expected to result in economies in operating expenses amounting to $472,000 a year. In a report of January 26, 1933, the commission found that the proposed leasing arrangement would be in the public interest, subject to acceptance by the Union Pacific of a condition that it should agree and undertake to abide by such findings as the commission might thereafter make with respect to the acquisition, at their commercial value, of the lines of the Laramie, North Park & Western and the Pacific & Idaho Northern, or their operation, in an ancillary proceeding in which the question of public convenience and necessity also should have consideration. In the supplemental application, made necessary by changes made in the law meanwhile, the company expressly agrees to abide by such findings.

The reasons urged in the original application in support of the proposal continue to exist, except that some of the economies expected to be effected through unified operation have been realized in other ways. As a result, the former estimate of total savings is now reduced from about $600,000 to approximately $472,000 a year. This amount includes wages $400,188, rents $44,412, telephone charges $700, and stationery and printing and other incidental office expenses, $27,000. There are now 145 officers and employees of the accounting and fiscal departments at Salt Lake City, Utah, 41 at Pocatello, Idaho, 91 at Los Angeles, Calif., 38 at St. Joseph, Mo., and 148 at Portland, Oreg., a total of 463. All accounting records, except corporate books, of the subsidiary companies are kept at one or another of these points. Under unified operation, these offices are to be discontinued and the accounting work consolidated at the applicant's office at Omaha, Nebr. The company still expects that about 60 per cent of the employees involved will be retained in its service if they will accept employment at Omaha. In this connection it has undertaken to safeguard them against financial loss in disposing of their present homes or equities in homes. Counsel for the Brotherhood of Railway and Steamship Clerks stated on the record that the matters in which they are interested have been adjusted.

The form of lease submitted with the supplemental application provides that the effective date shall be January 1, 1936. Otherwise it is substantially identical with the form originally submitted, a few amendments having been made for clarification of certain provisions and making more definite and certain the application of the lease in some respects.

With respect to the short lines, the record indicates that these interests and the applicant have reached a mutually satisfactory agreement as to prices for their properties, that the applicant is committed not to contest the question of public convenience and necessity, and that ancillary applications with respect to the properties will follow in due course.

WABASH. — *Operation.* — The Interstate Commerce Commission has authorized this road to operate over the line of the Wabash-St. Charles Bridge Company, and, in connection therewith, to relocate a portion of its line across the Missouri river near St. Charles, Mo. The decision states that the new line, together with the bridge now under construction by the bridge company, will be completed by December 31, 1936.

Average Prices of Stocks and of Bonds

	July 30	Last week	Last year
Average price of 20 representative railway stocks..	35.60	35.25	34.72
Average price of 20 representative railway bonds..	74.82	74.40	74.45

Dividends Declared

Alabama & Vicksburg.—$3.00, payable October 1 to holders of record September 9.

Erie & Kalamazoo.—$2.50, payable August 1 to holders of record July 26.

North Pennsylvania.—$1.00, quarterly, payable August 25 to holders of record August 20.

Portland.—5 Per Cent Preferred, $2.50, semi-annually, payable August 1 to holders of record July 13.

York.—Preferred, 62½c quarterly, payable July 31 to holders of record July 20.

Vicksburg, Shreveport & Pacific.—$2.50, payable October 1 to holders of record September 9.

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Railway Officers

EXECUTIVE

Harahan Heads Nickel Plate

William J. Harahan, who was elected president of the Chesapeake & Ohio and Pere Marquette on July 23, was elected also to the presidency of a third Van Sweringen road—the New York, Chicago & St. Louis—at a meeting of the latter's board of directors on July 30. In all three capacities Mr. Harahan succeeds the late John J. Bernet. A biographical sketch of Mr. Harahan's railway career, together with his photograph, were published in the *Railway Age* of July 27, page 113.

FINANCIAL, LEGAL AND ACCOUNTING

A. E. Shave, assistant treasurer on the Canadian National at Winnipeg, Man., has been appointed local treasurer, with headquarters at Vancouver, B. C., to succeed **H. G. Byrne,** who has been transferred to Winnipeg, as reported in the *Railway Age* of July 13.

Effective August 1, the land, right of way and real estate departments of the Minneapolis, St. Paul & Sault Ste. Marie were consolidated. **R. S. Claar,** right of way and real estate agent, was appointed real estate and land commissioner, and **H. S. Funston,** land commissioner, was appointed assistant real estate and land commissioner. Both officers will be located as before at Minneapolis, Minn.

OPERATING

Arthur C. Peterson, master mechanic of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Superior, Wis., has been promoted to superintendent of the Winnipeg division, with headquarters at Thief River Falls, Minn. **Harold A. Sparks,** assistant division superintendent, with headquarters at Gladstone, Mich., has been appointed superintendent of the Minnesota division, with headquarters at Enderlin, N. D.

F. B. Whitman, a trainmaster on the Chicago, Burlington & Quincy, with headquarters at Hannibal, Mo., has been appointed assistant superintendent of the Creston division, with headquarters at Creston, Iowa, succeeding **J. S. Miller,** who has been transferred to the Casper-Sheridan divisions, with headquarters at Casper, Wyo. **C. L. Gray,** trainmaster at Casper, has been transferred to Hannibal to succeed Mr. Whitman, and the position of trainmaster at Casper has been abolished.

TRAFFIC

R. W. Nelson, chief clerk to the traffic manager of the Minneapolis & St. Louis, with headquarters at Minneapolis, Minn., has been appointed general agent at St. Paul, Minn., to succeed **T. J. Pewters,** deceased.

E. T. Gillooley has been appointed general passenger agent for the Delaware & Hudson, with headquarters at Albany, N. Y., succeeding **M. J. Powers,** deceased.

ENGINEERING AND SIGNALING

C. H. Tusler, assistant engineer on the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Miles City, Mont., has been appointed division engineer of the Iowa and Dakota division, with headquarters at Mason City, Ia., succeeding **W. H. Wuerth,** who has been transferred to the Iowa division, with headquarters at Marion, Ia. Mr. Wuerth succeeds **H. B. Christianson,** who has been transferred to the Trans-Missouri division, with headquarters at Miles City, to replace **W. A. Ring,** who goes to the Hastings and Dakota division, with headquarters at Aberdeen, S. D., to succeed **H. C. Blake,** who has been assigned to other duties.

PURCHASES AND STORES

E. C. P. Cushing, purchasing agent on the Canadian Pacific, with headquarters at Vancouver, B. C., has been transferred to Winnipeg, Man., succeeding **S. V. T. Jeffery,** who in turn has been transferred to Vancouver.

OBITUARY

H. C. Caswell, locomotive shop superintendent of the Wabash at Decatur, Ill., died suddenly on July 3.

David G. Baird, secretary and treasurer of the Lehigh Valley, with headquarters at Philadelphia, Pa., died on July 24 at his home in Beverly N. J., after an illness of seven weeks. Mr. Baird, who was 82 years old, was born at Woodlawn, Cecil County, Md., and received a public school and business college education. He entered railroad service in 1873, as a bookkeeper with the Lehigh Valley, and had been in the continuous service of that road, serving successively as assistant cashier, assistant to vice-president, assistant secretary and secretary. In February, 1931, Mr. Baird was appointed treasurer in addition to serving as secretary.

Robert D. Crawford, general storekeeper of the International-Great Northern and Gulf Coast Lines, with headquarters at Palestine, Tex., died on July 30. Mr. Crawford was born on November 28, 1888, at Franklin, Tex., and received a high school education. He entered railway service in 1906 as clerk in the local freight office of the International & Great Northern (now International-Great Northern) and until 1910 he was employed in minor positions in the general offices of the mechanical department and general store department. In 1911 Mr. Crawford became chief clerk in the general store department at Palestine, Tex., and from 1912 to 1915 he served as district storekeeper at Palestine, Tex. In 1918 Mr. Crawford was appointed general storekeeper of the Inter-

Robert D. Crawford

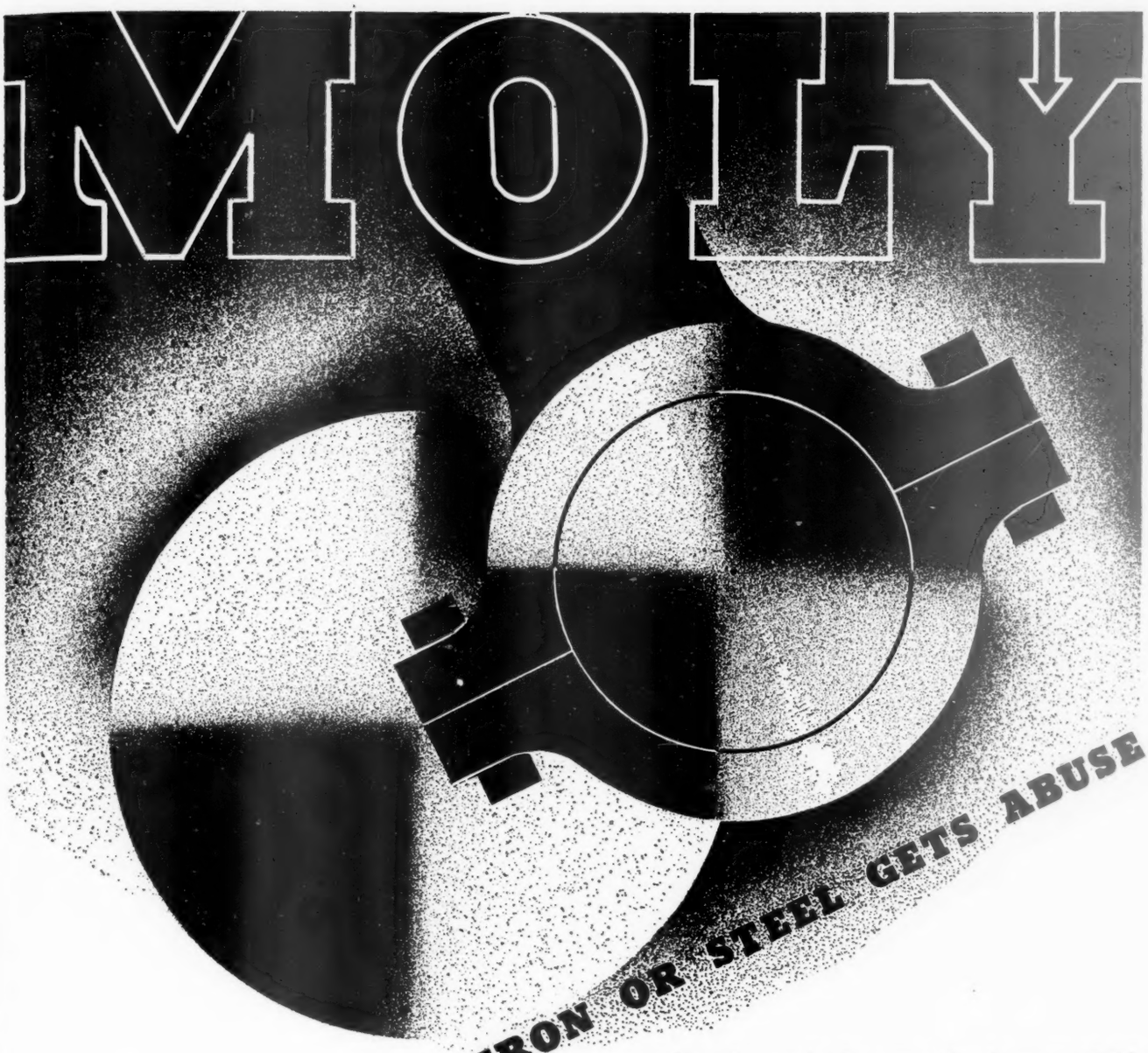
national-Great Northern road, the Gulf Coast Lines and the San Antonio, Uvalde & Gulf.

Gustav Lindenthal, distinguished engineer and bridge builder, died at his home in Metuchen, N. J., on July 31 at the age of 85. He had been in ill-health for nearly a year, but was well enough to join in a party celebrating his birthday on May 21 last. Mr. Lindenthal was born in Brunn, Austria, and was educated in polytechnic schools in Brunn and Vienna. He served in engineering on railroads in Austria and Switzerland before coming to America in 1874. He worked as a journeyman stone mason on buildings for the Centennial exposition in Philadelphia (1876), but his talent was soon recognized and he became an assistant engineer on that work. He served with the Keystone Bridge Company and for two years (1879-81) was bridge engineer of the Atlantic & Great Western, now a part of the Erie. Thereafter he had a wide experience as a bridge builder and in railroad service, but in 1890 he opened an office in New York City and began to agitate for the construction of a bridge across the Hudson at Fifty-seventh street, New York City; the most ambitious dream of his life, but one which was not fulfilled.

He was a member of the Board of Engineers for the Pennsylvania Railroad Tunnels under the Hudson River at New York (1902-04) and later was chief engineer of the New York Connecting Railroad, the chief feature of which is the Hell Gate Bridge. This crossing was one of unusually complex problems in bridge location and construction. This bridge, completed in 1917, has four tracks, with three miles of approaches on viaducts, and cost about $25,000,000.

Mr. Lindenthal was engaged in the construction of numerous other important bridges. He had received numerous honorary degrees and many decorations. He was a member of the American Association for the Advancement of Science; the Institute of Civil Engineers, London; the American Society of Civil Engineers; the Canadian Society of Civil Engineers; the American Institute of Consulting Engineers, and many other organizations.

Table of Operating Statistics of Railways begins on next left-hand page



TORSION — like the relentless twisting of a heavily loaded crankshaft. IMPACT — like the incessant battering of a trip-hammer or pile-driver. HEAT — like the torturing temperatures encountered by boiler tubes and cylinder walls. . . . There are many types of steel, both alloyed and unalloyed, which will meet certain specified physical requisites for normal resistances to these enemies of metallurgy. But what happens to such steels when they are subjected to overloads? Often they fail — and usually their failure is dismissed with the conclusion that "nothing can be done about it." But something *can* be done to enable both iron and steel to withstand heavier abuses. And the most outstanding element in the recent development of this much-desired added quality is "Moly"— the alloy which not only improves ordinary iron and steel but which actually enables other alloys to do *their* particular work better.

Interesting details about the properties of Moly irons and steels will be found in these two books which may be had for the asking: "*Molybdenum in* 1934" and "*Molybdenum in Cast Iron* — 1934 *Supplement*" . . . while current progress and specific examples of Moly applications may be followed through our periodical news-sheet "*The Moly Matrix.*" A post-card request puts you on our mailing list. And — if you've some particular alloy problem you'd like to have us help you solve, our metallurgists and Detroit experimental laboratory are at your command. Climax Molybdenum Company, 500 Fifth Avenue, New York. (In Canada: Railway & Power Engineering Corp., Ltd.)

CLIMAX Mo-lyb-den-um

Freight Operating Statistics of Large Steam Railways—Selected Items for the Month of May,

Region, road, and year	Average miles of road operated	Train-miles	Locomotive-miles: Principal and helper	Locomotive-miles: Light	Car-miles: Loaded (thousands)	Car-miles: Per cent loaded	Ton-miles (thousands): Gross Excluding locomotives and tenders	Ton-miles (thousands): Net Revenue and non-revenue	Average number of locomotives on line: Serviceable	Unserviceable	Per cent unserviceable	Stored
New England Region:												
Boston & Albany.....1935	402	117,381	122,141	8,304	3,006	69.8	150,858	50,924	57	38	39.9	17
1934	402	129,123	133,469	9,657	3,332	66.3	173,271	55,547	62	40	39.0	15
Boston & Maine.....1935	1,986	268,222	301,005	27,179	9,370	71.1	493,864	188,529	103	124	54.6	3
1934	2,022	267,348	305,383	30,726	9,692	68.6	521,237	195,053	124	153	55.2	20
N. Y., New H. & Hartf.....1935	2,045	335,393	406,843	19,131	11,034	65.9	591,556	211,031	191	112	37.1	20
1934	2,044	362,063	437,749	20,786	11,443	64.6	625,304	225,268	212	141	39.8	24
Great Lakes Region:												
Delaware & Hudson.....1935	835	203,457	277,438	32,023	7,077	63.7	434,549	199,982	246	31	11.3	154
1934	848	213,807	286,551	31,735	7,077	61.8	443,894	203,026	243	32	11.7	140
Del., Lack. & Western.....1935	992	337,024	377,383	47.808	11,141	65.8	649,111	255,838	167	83	33.3	49
1934	992	374,395	415,714	52,763	11,703	63.5	699,552	269,836	176	78	30.7	25
Erie (incl. Chi. & Erie)....1935	2,305	621,228	648,781	38,878	25,907	64.9	1,532,675	569,778	297	181	37.8	89
1934	2,315	693,061	732,345	58,224	29,039	61.7	1,802,345	670,606	302	188	38.4	65
Grand Trunk Western.....1935	1,007	237,848	240,325	2,039	6,425	60.7	386,315	124,143	74	71	49.0	..
1934	1,007	237,242	239,727	1,883	5,811	57.6	364,294	114,473	71	81	53.2	..
Lehigh Valley 1935	1,335	370,355	393,230	39,410	11,561	64.1	726,227	293,307	154	154	50.1	10
1934	1,335	408,495	430,539	41,313	12,660	63.8	779,201	311,085	182	134	42.4	10
New York Central (a).....1935	10,919	2,328,473	2,448,273	151,424	78,168	61.7	4,875,273	1,960,641	887	622	41.2	154
1934	10,938	2,460,880	2,573,367	148,314	82,636	59.3	5,189,986	2,010,720	924	674	42.2	120
New York, Chi. & St. L....1935	1,661	404,206	407,548	4,238	13,887	64.0	804,555	283,708	138	41	23.2	52
1934	1,661	495,205	499,455	4,395	15,023	60.5	896,393	302,765	122	51	29.5	18
Pere Marquette 1935	2,096	318,592	338,250	2,596	8,047	61.0	498,338	178,578	110	44	28.5	6
1934	2,108	346,389	354,538	2,827	8,291	57.4	537,048	192,711	111	42	27.8	11
Pittsburgh & Lake Erie.....1935	234	63,962	65,901	43	2,553	59.1	216,829	120,986	32	39	55.2	8
1934	234	70,573	72,236	.....	2,890	57.5	248,499	137,043	32	40	55.1	7
Wabash 1935	2,435	531,848	538,197	11,003	16,369	63.2	936,111	301,062	164	170	50.9	32
1934	2,445	552,962	561,819	11,651	16,769	59.4	1,013,866	310,144	160	178	52.8	38
Central Eastern Region:												
Baltimore & Ohio.....1935	6,321	1,258,627	1,507,171	154,517	37,562	62.9	2,493,333	1,110,447	740	576	43.8	140
1934	6,263	1,352,405	1,623,450	181,171	40,004	61.5	2,694,393	1,193,651	728	585	44.6	118
Central of New Jersey.....1935	684	139,077	156,919	28,281	4,660	59.7	319,782	151,573	70	87	55.4	16
1934	690	141,350	157,804	29,993	4,595	57.3	319,600	147,042	81	91	53.0	21
Chicago & Eastern Ill.....1935	939	156,325	156,517	2,369	3,479	63.4	217,299	87,298	49	60	55.1	5
1934	939	166,318	167,288	2,783	3,594	61.2	228,001	90,803	53	116	68.5	9
Elgin, Joliet & Eastern...1935	446	84,585	87,789	546	1,956	60.6	149,146	72,131	54	32	36.7	3
1934	446	83,810	85,946	1,112	2,026	59.7	156,345	76,761	64	25	28.3	11
Long Island 1935	393	29,241	29,930	15,739	296	52.9	22,467	9,059	33	20	38.5	..
1934	396	29,777	30,575	14,257	288	52.7	21,844	8,721	30	26	46.3	..
Pennsylvania System 1935	10,009	2,498,232	2,794,574	291,812	88,061	63.4	5,763,959	2,524,947	1,385	1,046	43.0	252
1934	10,088	2,639,392	2,935,183	314,290	90,351	60.9	6,100,086	2,640,160	1,394	1,010	42.0	309
Reading 1935	1,452	372,530	406,713	45,951	10,510	60.4	751,402	351,976	269	99	26.9	91
1934	1,454	407,966	444,101	50,422	11,386	58.0	830,113	383,437	257	124	32.5	72
Pocahontas Region:												
Chesapeake & Ohio.....1935	3,050	753,634	784,657	29,620	31,913	55.6	2,666,895	1,423,241	409	95	18.8	115
1934	3,106	824,920	867,079	33,720	35,126	54.7	3,017,824	1,609,611	449	96	17.6	129
Norfolk & Western.....1935	2,145	564,774	585,973	24,244	22,313	58.5	1,819,909	939,124	352	34	8.9	131
1934	2,164	590,039	614,067	27,038	23,551	57.8	1,975,581	1,039,609	410	54	11.6	176
Southern Region:												
Atlantic Coast Line.....1935	5,148	599,593	601,406	8,058	12,004	61.9	638,898	212,643	301	126	29.4	44
1934	5,145	606,747	608,953	7,767	11,462	58.2	640,204	208,474	330	135	29.1	69
Central of Georgia.....1935	1,886	224,637	225,702	3,324	4,877	68.8	267,240	102,767	95	45	32.4	..
1934	1,886	207,004	208,508	3,728	4,243	67.3	233,546	87,468	96	43	31.2	..
Illinois Central (incl. Y. & 1935	6,587	1,446,119	1,460,694	27,770	33,496	62.0	2,067,241	793,149	624	302	32.6	5
M. V.) 1934	6,617	1,469,051	1,492,108	26,977	32,063	59.4	2,020,256	745,449	576	350	37.8	9
Louisville & Nashville.....1935	5,046	994,785	1,079,233	24,874	22,367	60.3	1,523,461	695,135	322	260	44.6	15
1934	5,062	1,043,506	1,118,304	26,465	22,604	58.4	1,555,956	689,987	326	293	47.3	15
Seaboard Air Line.....1935	4,295	476,317	481,671	3,866	10,895	64.3	624,541	213,100	180	99	35.5	8
1934	4,296	492,373	509,809	2,616	11,858	64.3	686,865	247,022	209	75	26.4	5
Southern 1935	6,599	1,076,815	1,090,591	17,311	23,990	67.2	1,294,231	484,837	565	283	33.4	92
1934	6,599	1,129,418	1,145,300	17,175	24,615	64.7	1,364,913	502,857	614	294	32.4	107
Northwestern Region:												
Chi. & North Western.....1935	8,428	881,441	927,396	24,696	22,668	65.4	1,348,412	465,032	508	258	33.7	86
1934	8,443	939,987	980,445	20,533	23,310	62.4	1,402,792	477,910	560	241	30.1	132
Chicago Great Western.....1935	1,456	221,578	221,682	7,198	6,386	62.0	384,463	135,246	63	37	37.0	5
1934	1,463	205,777	206,966	16,817	6,539	59.6	400,121	134,390	61	37	37.8	2
Chi., Milw., St. P. & Pac...1935	11,118	1,164,627	1,221,261	52,623	29,962	60.8	1,878,412	732,153	473	197	29.5	102
1934	11,157	1,114,543	1,177,532	54,653	28,899	60.5	1,784,493	670,358	541	344	38.9	193
Chi., St. P., Minneap. & Om.1935	1,644	184,922	191,104	8,093	3,891	68.8	222,059	89,279	105	38	26.7	48
1934	1,653	198,383	206,236	8,954	4,093	64.0	244,410	95,314	119	34	22.2	56
Great Northern 1935	8,254	651,600	656,263	19,016	20,848	63.1	1,370,508	617,895	416	187	31.0	87
1934	8,335	618,874	623,451	19,504	20,532	65.8	1,304,874	602,528	424	170	28.7	106
Minneap., St. P. & S. St. M..1935	4,274	347,296	350,900	2,233	7,491	67.5	415,978	172,404	109	40	26.9	..
1934	4,281	343,023	347,330	2,856	7,564	65.1	435,985	181,344	118	42	26.0	3
Northern Pacific 1935	6,416	521,741	574,182	37,360	15,914	67.6	921,412	382,304	346	105	23.3	14
1934	6,412	522,025	563,609	37,091	15,872	68.2	910,125	372,200	346	167	32.6	54
Ore.-Wash. R. R. & Nav...1935	2,104	169,826	177,307	10,622	4,085	67.4	235,733	92,156	87	39	31.0	18
1934	2,109	142,844	148,040	8,721	3,553	68.2	196,306	73,638	74	46	38.0	14
Central Western Region:												
Alton 1935	921	190,650	195,181	1,431	3,907	58.8	253,821	84,990	52	41	44.2	1
1934	923	202,830	205,296	1,001	3,998	56.1	265,585	87,246	49	46	48.8	..
Atch., Top. & S. Fe (incl. 1935	13,308	1,619,573	1,696,717	62,956	42,862	63.0	2,589,331	847,718	627	369	37.1	138
G.C. & S.F. & P. & S.F.).1934	13,323	1,577,478	1,652,373	61,377	42,521	61.8	2,613,568	862,663	676	363	35.0	188
Chi., Burl. & Quincy.....1935	8,971	1,092,349	1,131,290	38,574	26,503	62.0	1,547,323	629,065	469	96	17.0	18
1934	9,096	1,102,528	1,145,902	39,504	27,336	60.5	1,612,645	641,587	450	110	19.6	5
Chi., Rock I. & Pac. (incl. 1935	8,297	1,009,245	1,024,732	5,528	21,729	61.5	1,302,037	460,921	357	270	43.0	19
Chi., Rock I. & Gulf)....1934	8,334	1,017,781	1,036,256	6,811	22,527	58.6	1,393,307	478,600	444	150	25.2	101
Denver & R. G. Western..1935	2,584	227,827	244,535	22,865	6,027	68.4	345,340	139,831	166	49	22.8	18
1934	2,469	197,782	213,076	20,822	5,764	68.3	326,192	131,160	166	60	26.5	30
Los Angeles & Salt Lake...1935	1,225	162,430	181,913	23,202	4,759	69.5	271,123	101,924	73	20	21.6	5
1934	1,232	155,702	175,003	20,644	4,363	65.7	259,875	97,449	72	22	23.6	8
Oregon Short Line.....1935	2,486	244,209	252,413	13,492	6,112	62.7	369,221	137,677	118	53	30.9	30
1934	2,454	225,538	235,198	15,496	5,750	63.8	336,380	119,901	122	59	32.7	33
Southern Pacific—Pacific 1935	8,601	1,211,466	1,305,256	138,494	50,567	60.9	2,574,862	818,068	525	259	33.1	137
Lines 1934	8,607	1,165,621	1,260,244	146,329	38,748	62.7	2,381,867	769,001	521	328	38.7	130
Union Pacific 1935	3,590	928,172	951,105	40,393	31,543	64.3	1,848,380	637,341	274	127	31.7	51
1934	3,768	802,838	822,968	34,835	29,772	65.2	1,696,922	577,508	299	123	29.2	92
Southwestern Region:												
Mo.-Kans.-Texas Lines.....1935	3,282	341,706	344,058	5,264	8,704	58.7	534,364	175,630	107	87	44.7	26
1934	3,282	366,755	369,529	3,995	9,516	59.5	579,190	191,664	151	77	33.8	68
Missouri Pacific 1935	7,208	1,069,951	1,095,311	22,617	27,987	63.2	1,689,862	622,046	382	168	30.5	121
1934	7,335	1,084,242	1,119,931	25,138	30,146	61.5	1,851,286	654,696	407	146	26.4	130
St. Louis-San Francisco....1935	4,993	642,648	652,449	8,213	13,314	61.5	811,961	310,302	367	82	18.3	122
1934	5,094	646,459	652,920	8,434	13,759	60.1	867,275	324,756	395	82	17.2	142
St. Louis Southwestern 1935	1,774	268,632	275,365	3,530	6,726	58.2	412,835	126,745	87	31	26.1	13
Lines 1934	1,798	252,269	257,761	3,364	6,806	59.0	407,343	121,837	91	43	32.0	4
Texas & New Orleans.....1935	4,429	506,652	507,380	7,562	11,895	64.7	704,195	250,416	231	68	22.6	57
1934	4,464	501,919	502,449	6,555	11,362	63.3	669,790	229,626	224	76	25.4	50
Texas & Pacific.....1935	1,945	255,002	255,002	1,508	7,401	62.1	450,092	149,500	153	68	30.6	76
1934	1,946	252,520	252,520	1,897	7,734	60.8	472,299	153,024	157	77	33.0	93

(a) Includes Michigan Central and Big Four Lines beginning with the May issue of this statement.

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

1935, Compared with May, 1934, for Roads with Annual Operating Revenues Above $25,000,000

Region, road, and year		Average number of freight cars on line: Home	Foreign	Total	Per cent unserviceable	Gross ton-miles per train-hour, excluding locomotives and tenders	Gross ton-miles per train-mile, excluding locomotives and tenders	Net ton-miles per train-mile	Net ton-miles per loaded car-mile	Net ton-miles per car-day	Car-miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotives and tenders	Locomotive-miles per locomotive-day
New England Region:														
Boston & Albany	1935	2,875	4,096	6,971	24.5	21,453	1,285	434	16.9	236	19.9	4,089	155	44.1
	1934	2,960	3,605	6,565	23.5	22,386	1,342	430	16.7	273	24.7	4,461	146	45.5
Boston & Maine	1935	8,467	7,981	16,448	13.8	25,884	1,841	703	20.1	370	25.8	3,062	103	46.6
	1934	8,579	7,564	16,143	14.5	26,780	1,950	730	20.1	390	28.2	3,112	101	39.1
N. Y., New H. & Hartf.	1935	14,768	9,853	24,621	15.9	25,556	1,764	629	19.1	276	22.0	3,329	106	45.4
	1934	14,906	10,868	25,774	12.3	25,886	1,727	622	19.7	282	22.2	3,555	105	41.9
Great Lakes Region:														
Delaware & Hudson	1935	11,457	2,423	13,880	4.7	29,030	2,136	983	28.3	465	25.8	7,723	111	36.1
	1934	11,260	2,879	14,139	4.4	27,962	2,076	950	28.7	463	26.1	7,721	109	37.3
Del., Lack. & Western	1935	16,519	4,420	20,939	12.5	31,710	1,926	759	23.0	394	26.1	8,321	132	54.9
	1934	16,375	4,968	21,343	11.9	28,617	1,868	721	23.1	408	27.8	8,776	139	59.6
Erie (incl. Chi. & Erie)	1935	23,566	11,090	34,656	6.9	41,442	2,467	917	22.0	530	37.1	7,974	95	46.4
	1934	25,124	14,305	39,429	6.0	42,181	2,601	968	23.1	549	38.5	9,343	94	52.0
Grand Trunk Western	1935	4,278	7,946	12,224	17.0	32,030	1,624	522	19.3	328	28.0	3,978	99	53.8
	1934	4,729	8,562	13,291	15.0	30,406	1,536	483	19.7	278	24.5	3,668	101	51.5
Lehigh Valley	1935	13,931	5,113	19,044	10.4	34,660	1,961	792	25.4	497	30.5	7,085	129	45.3
	1934	17,964	6,589	24,553	19.6	33,534	1,907	762	24.6	409	26.1	7,518	128	48.2
New York Central (a)	1935	78,778	103,152	181,930	18.8	36,082	2,094	842	25.1	348	22.5	5,792	102	55.6
	1934	93,700	102,407	196,107	17.8	36,383	2,109	817	24.3	331	22.9	5,930	101	54.9
New York, Chi. & St. L.	1935	8,728	5,735	14,463	4.6	37,064	1,990	702	20.4	633	48.4	5,511	89	74.1
	1934	8,577	6,331	14,908	4.6	34,089	1,810	611	20.2	655	53.7	5,881	94	93.7
Pere Marquette	1935	10,887	4,786	15,673	4.4	27,013	1,564	561	22.2	368	27.1	2,749	95	71.4
	1934	11,339	5,131	16,470	3.1	26,231	1,550	556	23.2	377	28.3	2,949	91	75.2
Pittsburgh & Lake Erie	1935	15,826	10,494	26,320	46.3	49,629	3,390	1,892	47.4	148	5.3	16,701	93	29.9
	1934	17,014	11,007	28,021	32.2	49,859	3,521	1,942	47.4	158	5.8	18,918	97	32.6
Wabash	1935	12,930	8,047	20,977	4.8	36,471	1,760	566	18.4	463	39.8	3,989	110	53.0
	1934	13,702	8,762	22,464	3.8	37,581	1,834	561	18.5	445	40.5	4,092	105	54.8
Central Eastern Region:														
Baltimore & Ohio	1935	78,328	20,431	98,759	18.2	26,776	1,981	882	29.6	363	19.5	5,667	143	40.7
	1934	81,680	19,926	101,606	17.9	26,549	1,992	883	29.8	379	20.7	6,148	146	44.3
Central of New Jersey	1935	12,632	8,507	21,139	28.6	29,430	2,299	1,090	32.5	231	11.9	7,148	140	38.1
	1934	16,197	7,218	23,415	34.1	27,554	2,261	1,040	32.0	203	11.0	6,875	144	35.2
Chicago & Eastern Ill.	1935	3,645	2,244	5,889	10.7	26,187	1,390	558	25.1	478	30.1	2,999	122	47.2
	1934	5,939	2,269	8,208	25.9	24,910	1,371	546	25.3	357	23.1	3,120	122	32.5
Elgin, Joliet & Eastern	1935	8,011	3,100	11,111	7.3	17,582	1,763	853	36.9	209	9.4	5,215	118	33.1
	1934	8,529	4,556	13,085	20.6	17,750	1,865	916	37.9	189	8.4	5,551	113	31.6
Long Island	1935	778	3,214	3,992	3.3	6,092	768	310	30.6	73	4.5	744	298	27.8
	1934	778	3,337	4,115	2.0	5,925	734	293	30.3	68	4.3	710	296	26.1
Pennsylvania System	1935	240,231	46,711	286,942	14.9	33,848	2,307	1,011	28.7	284	15.6	8,138	114	41.0
	1934	245,796	47,431	293,227	12.5	33,550	2,311	1,000	29.2	290	16.3	8,443	117	43.6
Reading	1935	31,774	7,223	38,997	7.9	26,007	2,017	945	33.5	291	14.4	7,820	147	39.7
	1934	34,850	7,816	42,666	13.9	24,859	2,035	940	33.7	290	14.8	8,509	148	41.8
Pocahontas Region:														
Chesapeake & Ohio	1935	42,887	10,044	52,931	1.8	50,837	3,539	1,889	44.6	867	34.9	15,052	73	52.2
	1934	43,049	11,549	54,598	1.7	51,691	3,658	1,951	45.8	951	37.9	16,717	71	53.3
Norfolk & Western	1935	34,811	4,157	38,968	2.2	48,276	3,222	1,663	42.1	777	31.5	14,120	100	51.0
	1934	35,520	4,474	39,994	3.8	49,465	3,348	1,762	44.1	839	32.9	15,497	98	44.5
Southern Region:														
Atlantic Coast Line	1935	23,452	6,699	30,151	21.3	19,137	1,006	355	17.7	228	20.8	1,333	109	46.1
	1934	26,438	5,647	32,085	24.6	18,954	1,055	344	18.2	210	19.8	1,307	122	42.7
Central of Georgia	1935	6,159	2,464	8,623	25.5	21,745	1,190	457	21.1	384	26.5	1,758	122	52.8
	1934	7,294	2,005	9,299	25.0	20,413	1,128	423	20.6	303	21.8	1,496	129	49.3
Illinois Central (incl. Y. & M. V.)	1935	44,234	15,777	60,011	33.8	25,725	1,430	548	23.7	426	29.0	3,884	128	51.8
	1934	53,176	13,768	66,944	39.6	24,835	1,375	507	23.2	359	26.0	3,634	132	52.9
Louisville & Nashville	1935	44,411	8,463	52,874	27.5	24,169	1,531	699	31.1	424	22.6	4,443	131	61.2
	1934	48,587	8,635	57,222	30.4	23,276	1,491	661	30.5	389	21.8	4,397	132	59.6
Seaboard Air Line	1935	10,979	4,453	15,432	4.2	22,542	1,311	447	19.6	445	35.4	1,600	115	56.1
	1934	11,727	5,128	16,855	6.4	22,872	1,395	502	20.8	473	35.3	1,855	114	58.3
Southern	1935	27,365	14,067	41,432	16.9	20,752	1,202	450	20.2	377	27.8	2,370	147	42.2
	1934	32,122	13,520	45,642	17.8	20,566	1,209	445	20.4	355	26.9	2,458	150	41.3
Northwestern Region:														
Chi. & North Western	1935	41,334	20,327	61,661	10.8	23,403	1,530	528	20.5	243	18.1	1,780	126	40.1
	1934	43,069	17,435	60,504	11.7	23,518	1,492	508	20.5	255	19.9	1,826	122	40.3
Chicago Great Western	1935	2,382	2,759	5,141	4.1	32,737	1,735	610	21.2	849	64.6	2,996	125	73.8
	1934	2,186	2,551	4,737	2.3	35,563	1,944	653	20.6	915	74.7	2,963	123	73.1
Chi., Milw., St. P. & Pac.	1935	50,511	14,569	65,080	2.8	25,927	1,613	629	24.4	363	24.4	2,124	121	61.3
	1934	56,509	14,426	70,935	5.4	25,112	1,601	601	23.2	305	21.7	1,938	116	44.9
Chi., St. P., Minneap. & Om.	1935	1,963	6,425	8,388	10.9	17,477	1,201	483	22.9	343	21.8	1,752	116	44.9
	1934	2,191	6,837	9,028	11.0	18,255	1,232	480	23.3	341	22.9	1,860	110	45.4
Great Northern	1935	41,629	8,498	50,127	9.7	33,062	2,103	948	29.6	398	21.3	2,415	115	36.1
	1934	42,180	8,818	50,998	9.4	31,219	2,108	974	29.3	381	19.7	2,332	110	34.9
Minneap., St. P. & S. St. M.	1935	13,928	3,352	17,280	4.8	19,177	1,198	496	23.0	324	20.8	1,301	105	76.1
	1934	16,232	3,129	19,361	5.0	20,267	1,271	529	24.0	302	19.4	1,367	99	70.6
Northern Pacific	1935	33,723	4,170	37,893	12.4	28,238	1,766	733	24.0	325	20.0	1,922	156	43.8
	1934	40,140	3,954	44,094	13.5	26,877	1,743	713	23.5	272	17.0	1,873	150	37.7
Ore.-Wash. R. R. & Nav.	1935	7,126	1,685	8,811	10.0	23,630	1,388	543	22.6	337	22.2	1,413	152	47.9
	1934	8,294	1,621	9,915	5.0	22,715	1,374	516	20.7	240	17.0	1,126	139	42.1
Central Western Region:														
Alton	1935	2,995	6,145	9,140	20.0	31,637	1,331	446	21.8	300	23.5	2,976	116	68.2
	1934	3,248	5,935	9,183	22.8	28,057	1,309	430	21.8	306	25.0	3,051	126	70.1
Atch., Top. & S. Fe (incl. G.C. & S.F. & P. & S.F.)	1935	74,766	9,905	84,671	12.9	30,450	1,599	523	19.8	323	25.9	2,055	124	57.0
	1934	78,668	9,481	88,149	12.6	30,882	1,657	547	20.3	316	25.2	2,089	106	53.2
Chi., Burl. & Quincy	1935	32,768	11,009	43,777	9.2	25,377	1,417	576	23.7	464	31.5	2,262	124	66.8
	1934	36,439	11,787	48,226	11.3	25,728	1,463	582	23.5	429	30.2	2,275	119	68.3
Chi., Rock I. & Pac. (incl. Chi., Rock I. & Gulf)	1935	30,845	10,500	41,345	17.0	22,974	1,290	457	21.2	360	27.6	1,792	141	53.1
	1934	33,950	10,458	44,408	23.4	24,053	1,369	470	21.2	348	27.9	1,852	132	56.7
Denver & R. G. Western	1935	13,367	2,588	15,955	5.1	23,876	1,516	614	23.2	283	17.8	1,746	158	40.2
	1934	14,105	2,228	16,333	5.2	25,355	1,649	663	22.8	259	16.7	1,714	161	33.4
Los Angeles & Salt Lake	1935	4,580	1,070	5,650	8.9	29,563	1,669	627	21.4	582	39.1	2,684	142	71.2
	1934	5,101	948	6,049	10.4	29,108	1,669	626	22.3	520	35.4	2,552	139	67.4
Oregon Short Line	1935	8,080	3,145	11,225	27.7	27,141	1,512	564	22.5	396	28.0	1,787	122	50.1
	1934	8,547	3,091	11,638	19.5	25,520	1,491	532	20.9	332	25.0	1,576	113	44.6
Southern Pacific—Pacific Lines	1935	34,249	25,249	59,498	8.5	34,569	2,125	675	20.2	444	36.1	3,068	102	59.4
	1934	35,795	23,210	59,005	9.7	33,293	2,043	660	19.8	420	33.8	2,882	103	53.4
Union Pacific	1935	24,888	8,063	32,951	19.4	47,664	1,991	687	20.2	624	48.0	5,727	115	79.9
	1934	23,932	7,047	30,979	20.9	49,655	2,114	719	19.4	601	47.5	4,944	106	65.6
Southwestern Region:														
Mo.-Kans.-Texas Lines	1935	5,689	3,211	8,900	3.6	28,813	1,564	514	20.2	637	53.7	1,726	87	58.1
	1934	8,455	3,090	11,545	2.5	29,884	1,579	523	20.1	536	44.7	1,884	82	53.0
Missouri Pacific	1935	19,535	15,667	35,202	3.9	29,503	1,579	581	22.2	570	40.6	2,784	121	65.6
	1934	21,766	16,377	38,143	4.3	31,153	1,707	604	21.7	554	41.5	2,879	115	66.8
St. Louis-San Francisco	1935	22,129	5,016	27,145	6.6	23,052	1,263	483	23.3	369	25.7	2,005	131	47.5
	1934	22,506	4,755	27,261	6.8	23,962	1,342	502	23.6	384	27.1	2,056	128	44.7
St. Louis Southwestern Lines	1935	3,640	3,509	7,149	6.9	29,853	1,537	472	18.8	572	52.2	2,305	92	76.6
	1934	4,579	3,095	7,674	8.9	30,586	1,615	483	17.9	512	48.5	2,186	86	62.7
Texas & New Orleans	1935	7,405	11,153	18,558	8.2	24,866	1,390	494	21.1	435	31.9	1,824	91	55.5
	1934	8,005	11,921	19,926	7.5	23,601	1,334	457	20.2	372	29.1	1,659	89	54.6
Texas & Pacific	1935	2,863	4,253	7,116	5.3	29,422	1,765	586	20.2	678	54.0	2,479	85	37.5
	1934	3,523	4,213	7,736	7.5	29,719	1,870	606	19.8	638	53.1	2,537	81	35.0

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